

MANUFACTURERS' RECORD

A Weekly Southern Industrial and Hardware Newspaper.

Vol. XIV. No. 5.
WEEKLY.

BALTIMORE, SEPTEMBER 8, 1888.

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Report of the AQUEDUCT Commissioners.

[NEW CROTON AQUEDUCT, NEW YORK.]

AN ELABORATE VOLUME, CONTAINING AUTHORITATIVE TABLES BY THE CHIEF ENG., B. S. CHURCH. JUST ISSUED.

PLANT (by actual count from Table 13.)

Number of Ingersoll Drills used..... 249

Number of Drills of all other kinds used... 103

PROGRESS (by actual figures from Table 8.)

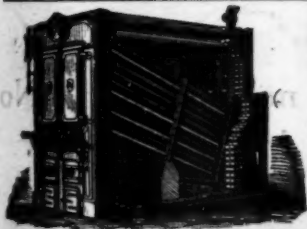
Average weekly progress in best 20 headings that used Ingersoll Drills exclusively (omitting all idle weeks)..... 38-72

Average weekly progress in best 20 headings that used other drills exclusively (omitting all idle weeks) 31-68

DIFFERENCE OF 50 PER CENT. IN FAVOR OF INGERSOLL DRILLS.

All headings where Ingersoll Drills were used exclusively have been completed. Send for description of Aqueduct, with Engineers' Tables of Progress and Catalogue. Sent free.

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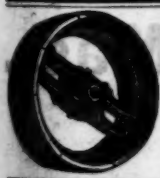
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A. S. FISKE, Esq., 24 Johnson Building, Cincinnati, O.
A. S. FISKE, Esq., 24 Corn Exchange, Minneapolis, Minn.
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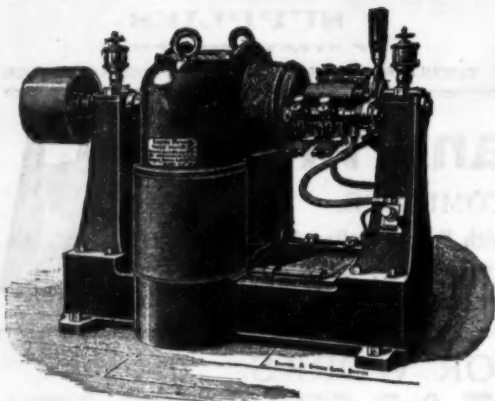
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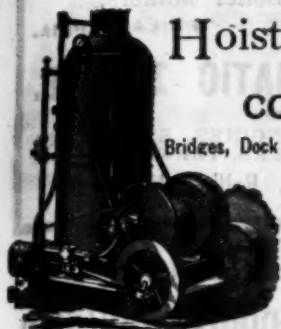
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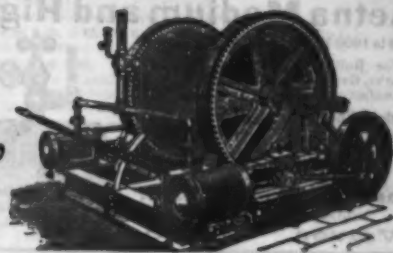
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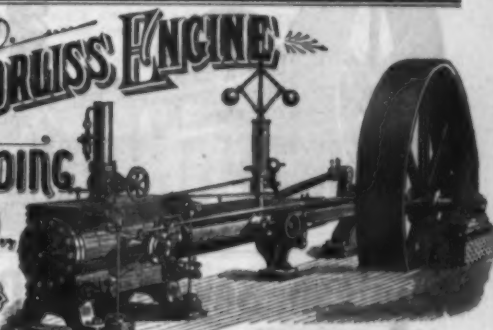
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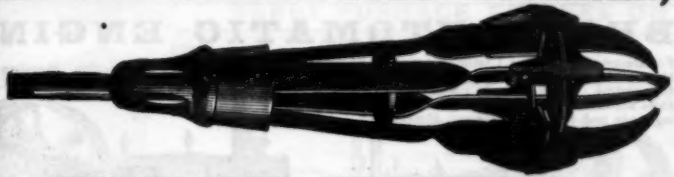
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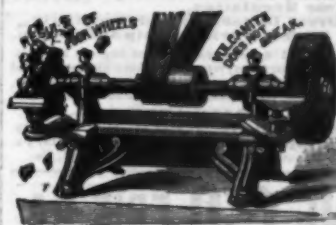
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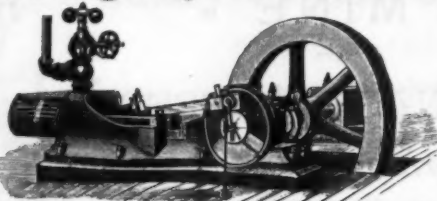
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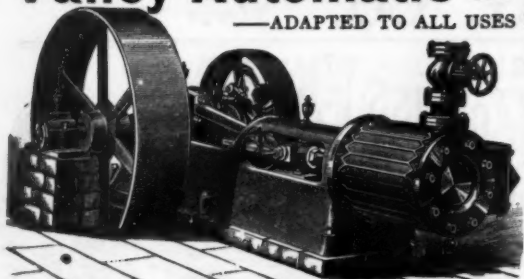
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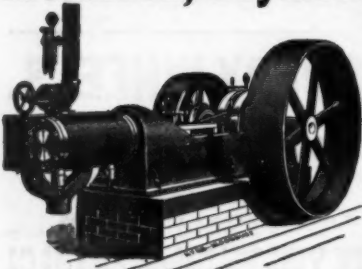
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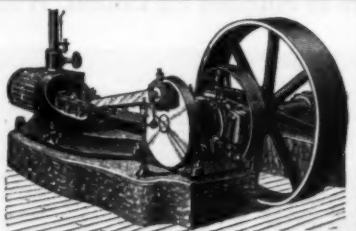
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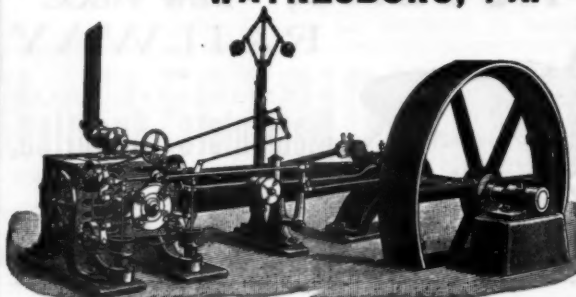
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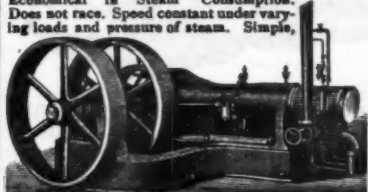
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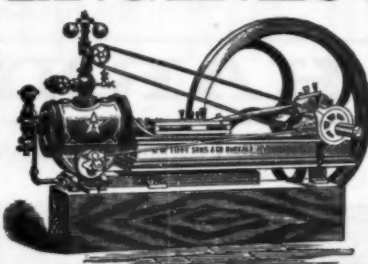
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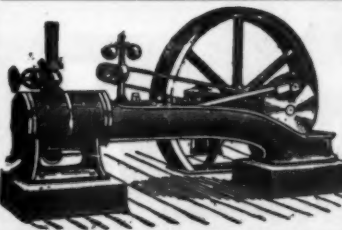
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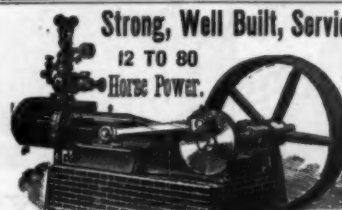
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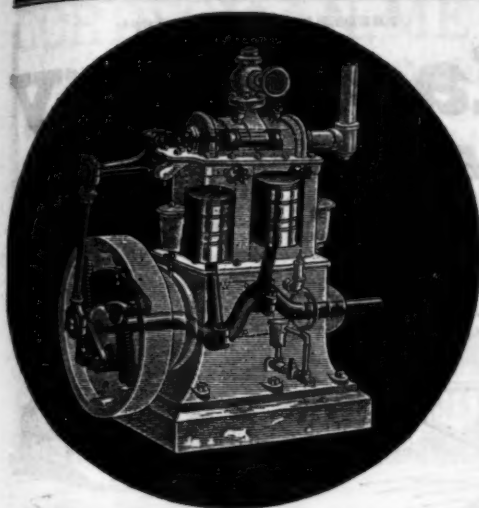
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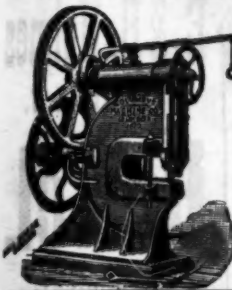
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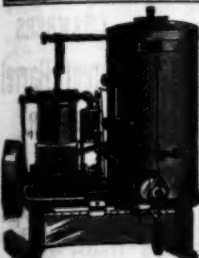
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No dust, ashes, or smoke. No Skilled Engineer required. "Breaker" Tests
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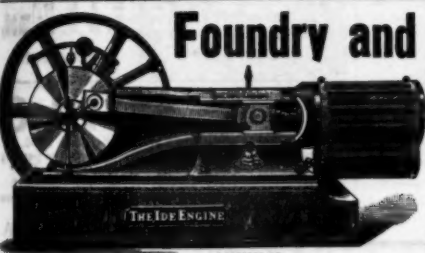


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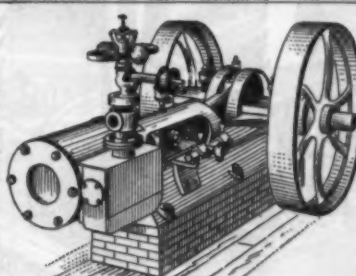
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which it has greatly increased their Power and Speed.

**Thousands of Horse Power in Use
ALL OVER THE COUNTRY.**

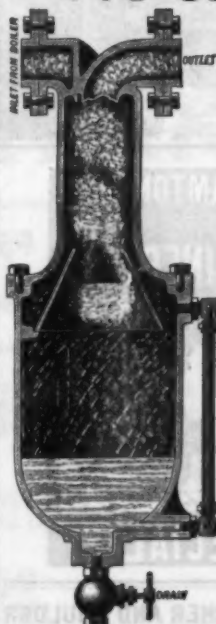
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Corrugated Metal Gaskets.

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Are the most reliable for flange connections; made plain, oval,
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Acknowledged and recommended by Engi-
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screws to break. 2. The steam can be turned
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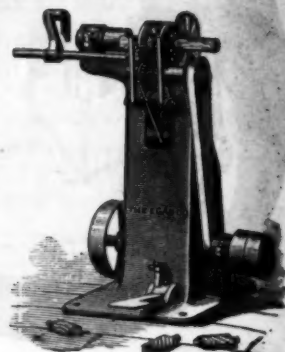
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TOOLS
In the United States

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—TO THE—

Smallest "Plantation" Mill.



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CAPACITY:

300 tight or 500
slack barrels per
day. The best
Heater made.

E. & B. Holmes,
SOLE AGENTS

With De Loach Pat. Variable Friction Feed.

\$500.00 mill cuts.....	10,000 feet per day
300.00 " "	20,000 " " "
100.00 " "	30,000 " " "

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ROD, PIN OR DOWEL
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Never Fails in Yellow Pine or Hard Lumber.

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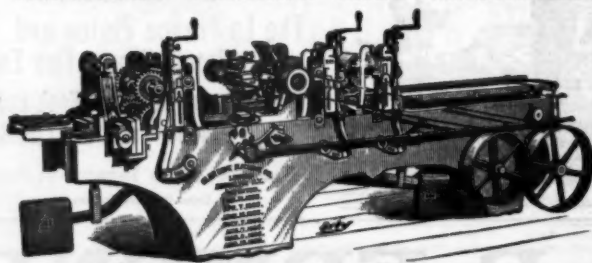
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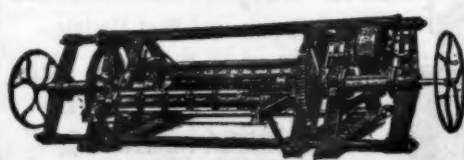


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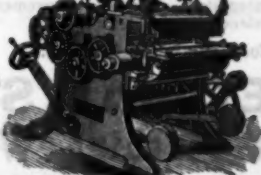
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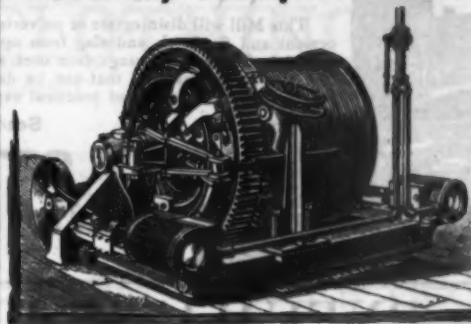
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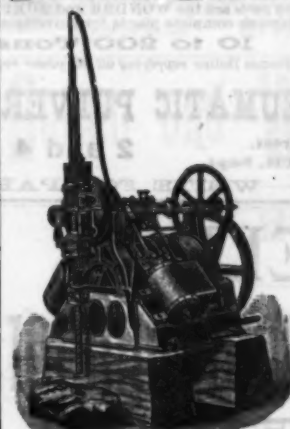
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3,000 in use; made in
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can stop, change the saw and
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The principle of pulverization consists in the employment of

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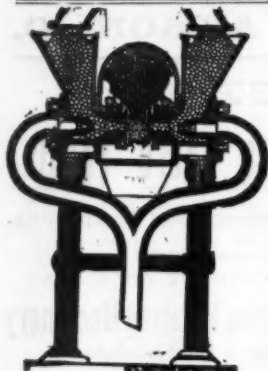
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L. F. HOLMAN, Pres.
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WISWELL Ore Pulverizer AND Amalgamator COMBINED.



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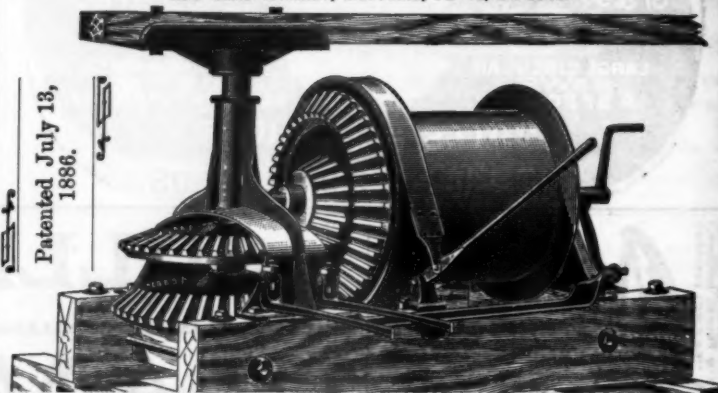
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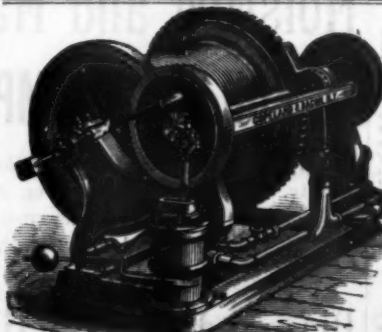
SIMPLE, DOES NOT GET OUT OF ORDER.

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For Bridge Builders, Contractors, Quarrymen, Mineral and Coal Miners, Masons and Builders.

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(With or Without Boilers.)

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BUILDERS AND IMPORTERS OF

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Tempered Steel } CARD CLOTHING. } READY
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A Great Success. TRY IT! Over 70 New England Mills now using it. Cuts, Descriptive Circulars, Estimates, Etc., on request.

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Hardened and Tempered Steel Wire

For COTTON and WOOLEN MILLS.

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CARD CLOTHING of Every Description,

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Cylinder 30 inches in Diameter.

We make for the above compress the following claims:

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The Campbell Cotton Compress Co.

OFFICE,

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Cheapest and Most

ECONOMICAL.

The Campbell Com-

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that will run on small

lots of cotton at a profit.

Adapted to a small mar-

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to the best, and costs

but one-half. Fully guar-

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OF SUPERIOR QUALITY.

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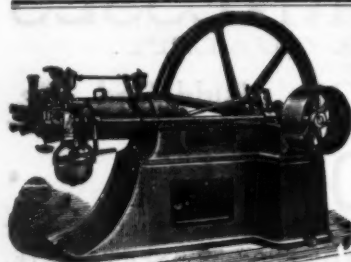
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30 to 70 per ct. less Gas consumption than ANY OTHER ENGINE.

Working Without Boiler, Steam, Coal, Ashes or Attendance.

Started instantly by a Match, it gives full power immediately. When stopped, all expense ceases.

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Automatic Sprinklers,
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Milled Machine Screws,
Special Milled Work
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Tested Four Years Before Placing on the Market. Superseding the Ratchet.

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Smith's Patent. Patented June 5, 1883.

Instantaneous Clutch. No Lost Motion. Noiseless.

YORK MFG. CO.
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ICE AND REFRIGERATING MACHINES.

Engines and Boilers.

Automatic Engines.
Yacht Engines. Factory Engines.

YORK IMPROVED TURBINE WATER WHEELS.

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Buy and sell Bills of Exchange on Great Britain, Ireland, and other foreign points. Issue Commercial and Travelers' Credits in Sterling, Francs or Dollars, available in any part of the world. Make Telegraphic Transfers of Money between this and other countries. Make Collections. BROWN BROTHERS & CO., New York, Philadelphia and Boston. BROWN, SHIPLEY & CO., London and Liverpool.

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Iron, Steel and Copper Wire, Wire Rope, Barbed Wire. Chicago Warehouse, 107 Lake Street. New York Warehouse, 14 GUN Street.

Manufacturers' Record.

PUBLISHED EVERY SATURDAY BY THE
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COR. EXCHANGE PLACE AND COMMERCE STREET
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SUBSCRIPTION \$4.00 A YEAR.

BALTIMORE, SEPTEMBER 8, 1888.

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PROVIDENCE, R. I., August 3, 1888.

Editor Manufacturers' Record:

Your favor of August 1st in regard to our advertisement received this morning, and in reply will say that we wish you to continue the advertisement as heretofore. We have advertised more or less in other papers and are doing so now, but we know of no advertisement, so far as we are able to judge, that brings as satisfactory results for the money expended as our card which has been in the MANUFACTURERS' RECORD for the last year. Yours truly,

C. R. MAKEPEACE & CO.,
Architects and Mill Engineers.

The Schenck Belt Holder & Shifter Company.

NEW YORK, July 26, 1888.

Editor Manufacturers' Record:

Of the great number of inquiries which we have received regarding the Schenck belt holder and shifter, a large portion are the result of our "ad." in your journal. We also find that the information contained in its columns is very valuable in our business. Respectfully,

THE SCHENCK
BELT HOLDER & SHIFTER CO.Frank W. Swett, Manufacturer of
Band Saws and Band Saw Tools.

CHICAGO, ILL., June 1, 1888.

Editor Manufacturers' Record:

Please find enclosed contract signed for advertising in your paper—third renewal. I have had a fine trade so far this year, and I consider your paper the best medium I know of to reach the machinery dealers and manufacturers, and that is why I continue in it. I always stick to a good thing. Have had quite a large trade South this season.

FRANK W. SWETT.

A. Wyckoff & Son, Manufacturers of
Wood Water Pipe.

ELMIRA, N. Y., June 30, 1888.

Editor Manufacturers' Record:

We are very much pleased with the results of advertising in the MANUFACTURERS' RECORD. We have had numerous inquiries and have sold considerable goods, which we can trace direct to our advertisement in the MANUFACTURERS' RECORD.

A. WYCKOFF & SON.

Cordeman, Meyer & Co., Manufacturers
of Wood-Working
Machinery.

CINCINNATI, O., January 11, 1888.

Editor Manufacturers' Record:

We are highly pleased with the returns from our advertisement in your journal, and take pleasure in commending it to others in our line as a valuable medium for reaching the trade. Yours very truly,

CORDEMAN, MEYER & CO.

F. F. Waters Manufacturing Co., Manufacturers
of Smith's Patent
Friction Drill.

BOSTON, MASS., February 4, 1888.

Editor Manufacturers' Record:

It gives us pleasure to state that our "ad." in the MANUFACTURERS' RECORD has brought us, on the average, about 30 letters per month. We consider it a paying investment. Respectfully,

F. F. WATERS MFG. CO.

F. F. Adams Co., Manufacturers of
Patent Household Articles.

PHILADELPHIA, March 10, 1888.

Editor Manufacturers' Record:

The "ad." we have in your paper we consider one of the best investments we have made this year. We are receiving numerous enquiries from first-class homes, asking for catalogues and best cash prices. This is our second year with you, and we can trace a number of our orders direct to our "ad." in the RECORD. We have tried other papers who claim to reach the trade we are seeking, and have settled on the MANUFACTURERS' RECORD as being superior to all others for Southern trade. Yours truly,

THE F. F. ADAMS CO.

THIS issue of the MANUFACTURERS' RECORD is devoted very largely to the railroad interests of the South. We have aimed to present the facts as to the remarkable increase in railway mileage of the South, and the vast sums expended in building new roads and improving old ones since 1880. In this connection it was deemed desirable to give a general review of the iron interests of the South and their wonderful expansion, with some statistics showing the volume of traffic which the building of furnaces is developing. The growth of the iron industry in that section has been the most potent factor in causing the building of thousands of miles of new road and the great additions that are being made to the rolling stock of Southern roads.

Of such immense influence upon the future railroad, manufacturing and financial interests of the entire country must the construction of so many furnaces inevitably prove, that we have brought together in the article on the iron interests of the South, many facts and figures heretofore published, but never before grouped together so as to cover the whole business. In connection with the building of railroads, one of the most important industries is the construction of cars. The South possesses many advantages over any other section of the country for this business. The iron and the lumber are obtainable there at a lower cost than in any other part of the country, and the South must become the chief seat of car building operations. The article in this issue on the car works of that section will prove of great value as showing what has already been accomplished in that line.

SOME considerable sales of iron ore property in Stokes county, N. C., have been made to Mr. Thomas Ewing, of New York city, and others, who state that they will shortly build one or two small charcoal furnaces, and larger furnaces later on after better railroad facilities have been secured. The laying out of a town is contemplated.

THE car works at Roanoke, Va., employ on an average 1,000 hands, which is a larger number than is now employed by any other car works in the South, though Decatur and Anniston will soon be on a par. A few years ago Roanoke was a little country village of 400 inhabitants; now its population numbers 12,000, and is steadily growing. Splendidly located, and possessing many advantages, not the least of which is the enterprise of its business men, Roanoke has a bright future.

Increase of Rolling Stock on Southern Roads.

According to reports received by the MANUFACTURERS' RECORD the Louisville & Nashville Railroad Co. was the heaviest purchaser of rolling stock of all Southern roads during the last twelve months. That road purchased during that time 25 locomotives and 2,325 freight cars; the Norfolk & Western, another great coal carrying road, ordered 15 locomotives and 1,178 freight cars. The Alabama Great Southern added to its rolling stock 3 locomotives and 758 freight cars; the Cincinnati, New Orleans & Texas Pacific, 16 locomotives and 758 freight cars; the Central, of Georgia, 50 locomotives and 500 freight cars; the Newport News & Mississippi Valley Co., 10 locomotives and 600 cars; the Kansas City, Memphis & Birmingham Railroad, 20 locomotives and 600 freight cars.

The roads which pass through the mineral regions are of course the ones which have found it necessary to add most largely to their rolling stock. It is in this direction where the greatest development is seen in freight matters. It has rightly been said that the greatest freight creator in the world is a big iron furnace. It is a ravenous consumer of coke and ore and limestone, and few realize the magnitude of the traffic thus developed. Elsewhere in this issue we have given some statistics exhibiting the enormous volume of freight traffic which will be furnished next year by the furnaces of the South. It is shown there that the South's iron interests will furnish more freight to the railroads next year than the entire wheat crop of the country. The influence of this upon railroad operations may be readily understood from a few illustrations.

Less than two years ago a forest covered the site where Bessemer now stands. In that wonderful town two furnaces have been completed and five more are under construction.

These seven furnaces when in full operation will afford over 1,700,000 tons of freight. This represents 85,000 car-loads of 40,000 pounds each. It is just about equal in tonnage to the entire cotton crop of the State. Here is a town, built where not a ton of freight was afforded the railroads two years ago, which will soon be furnishing from its iron industries alone as many tons of freight as the whole cotton crop of the South.

Sheffield is another illustration. Four years ago the site of Sheffield was a corn field. Now there are five furnaces there, and they will create a new freight business of upwards of 1,300,000 tons, or 65,000 car-loads, a year. Anniston's two new furnaces will add nearly 700,000 tons to the freight traffic of the railroads centering there. At many other places the same wonderful development is going on. These facts tell the reason why Southern railroads reaching the mineral regions are making such great additions to their rolling stock. This development, however, is hardly well under way yet. In ten years the increase will be enormous.

The South's Growth.

In its special issue of September 1 the New Orleans Times-Democrat gives some interesting statistics in line with what the MANUFACTURERS' RECORD has so often shown regarding the industrial advance of the South, and from it we gather the following figures:

The doubter who may regard what the papers have had to say about the South as due to a disposition to "boom" things must be convinced by the official figures of the assessments. No one can imagine for a second that these exaggerate the value of property. On the contrary, there is a strong disposition to undervalue it. When, therefore, the assessments show that the wealth of the South is increasing at a rate nearly twice as great as the population, it is evidence of prosperity which none can deny or dispute. The following is the assessment of the several Southern States during the census year and for 1887-88. The assessments now being made will show a still larger increase:

	1880-88.	1877-80.
Alabama.....	\$ 274,028,869	\$ 217,489,184
Arkansas.....	148,858,206	80,469,264
Florida.....	84,840,534	79,471,618
Georgia.....	341,504,481	235,650,530
Kentucky.....	483,491,690	318,377,875
Louisiana.....	291,900,000	198,577,495
Mississippi.....	129,887,754	106,594,708
North Carolina.....	216,035,453	156,100,000
South Carolina.....	241,495,256	139,437,686
Tennessee.....	239,739,000	161,708,538
Texas.....	699,412,401	304,493,169
Virginia.....	374,043,338	308,455,135
Total.....	\$3,540,774,772	\$2,164,792,795

In the census report on valuation, the Census Bureau in 1880 estimated that the true value of property of all kinds in the South was much greater than the assessments—57 per cent. greater in Texas and Virginia, 43 per cent. in Georgia—the total being \$5,725,000,000 as against an assessment of \$2,164,792,795. On this basis the true valuation of the South to-day is \$8,570,829,140, showing an increase during the past eight years of \$2,845,829,140, with an improvement in the assessment of \$1,075,981,927.

The wealth to each inhabitant is:

Assessed wealth per capita, 1880.....	\$248 42
Assessed wealth per capita, 1888.....	171 11
Actual wealth per capita, 1888.....	452 43

This improvement has kept on steadily from year to year, as the following figures from the Times-Democrat's reports will show:

1879.....	\$2,164,792,795
1880.....	2,386,640,400
1881.....	2,473,000,493
1882.....	2,565,005,707
1883.....	2,780,115,803
1884.....	2,887,834,160
1885.....	2,990,514,535
1886.....	3,038,536,899
1887.....	3,064,807,443
1888.....	3,070,774,772

It will be noted that the last year's improvement was considerably above the average.

It is reported that the site has been purchased at Portsmouth, Va., for the great car works which have been talked of for some time. Mr. Thomas Breen, of Washington, D. C., who is president of the company, states that this will be one of the largest car plants in the country, and that eventually 2,000 hands or more will be employed.

BUILDING CARS.

What the South Is Doing in This Line.

Rapid Development of a Great Industry.

Superior Advantages of the South for Car Works.

Cheap Lumber and Iron.

The rapid growth of the car-building interests of the South has been scarcely appreciated by those who have not closely watched this business. Instead of shipping their lumber and iron to Northern and Western works, to be returned in the shape of cars, the people of the South, appreciating the unequalled advantages of their section for this profitable industry, are fast increasing the number and capacity of Southern car works, that the iron from Southern furnaces and the lumber from Southern forests may be fashioned into cars at home, thus diversifying the industrial interests of that section and vastly increasing its wealth. There are probably few manufacturing industries for which the South offers greater inducements than car building. The two chief items—lumber and iron—that enter into the construction of a car can be had at a lower price in the South than at any other point in the country. In fact, Northern and Western car builders are compelled to draw immense supplies of lumber and iron from the South, paying heavy freight charges, while well located Southern works, in some cases, have both iron and lumber almost at their very doors, thus saving the expense of long transportation. What this saving of freight and cheap lumber and iron means in the way of enabling Southern works to build cars at a very much lower cost than Western works can possibly do, may be understood from the following extract from the manager of large car works in Alabama:

"We can buy the lumber here, saving transportation, as the mills are here in the lumber districts of oak and yellow pine. We get our lumber at \$12 and \$14 per M, while same lumber is worth \$22 and \$24 at any Northern works. Beside we get a better class of lumber by being located near the mills. We can buy our pig iron here at \$12, when it is worth about \$16 North."

The saving in these two items is immense, and a car plant which consumes, say, 5,000,000 feet of lumber a year would save on this item alone \$40,000 to \$50,000 a year, or 8 to 10 per cent. on a capital of \$500,000. In iron the saving is also very heavy, being about 25 per cent. according to these figures. Moreover, in building cars for Southern roads, there is a very large saving as compared with Western works, because, after freight is paid on the lumber and iron shipped West, another freight must be paid on the finished car when it is shipped South to the purchasing road.

The only advantage over the South which Northern and Western works now possess is that skilled labor in car works costs a little more at the South than at the North, but this is only temporary and will soon pass away with the steady increase in the number of skilled laborers in this section. Common labor costs less at the South than at the North.

There are now about 25 works in the South making cars, wheels or axles, some few making all three. This number of course does not include the plants owned by railroad companies. Nearly every railroad company of any importance in the South has one or more shops where general repair work is done, and in most of these shops a considerable amount of new rolling stock is built. Some few roads build nearly all of their own cars, both

freight and passenger. It is of the car works that are independent of railroad ownership that we are now dealing.

In Maryland there is one plant devoted to building narrow gauge locomotives, which is the only works in the South exclusively devoted to locomotive construction. This is the Mount Savage Locomotive Works, which is reported as having a capacity of 50 locomotives a year. The Baltimore Car Wheel Co. has a capacity of 120,000 wheels a year and employs from 80 to 120 hands, as the business demands. The South Baltimore Car Works is quite an extensive plant recently established which builds freight cars.

In Virginia car building has made great progress. The largest plant in the State is the Roanoke Machine Works, of Roanoke, which employs on an average about 1,000 hands. Their capacity is 2,500 cars and 35,000 wheels a year. These works have done an immense business, and their last annual report showed that they were earning large profits. They not only build cars and make wheels, but do a considerable amount of locomotive building, having turned out many of the locomotives used on the Norfolk & Western road, by which they were originally established. A few years ago considerable attention was attracted to these works by their receipt of an order for 500 cars, to be built for a New York and New England road, in competition with the leading car works of the country. This was an invasion of the North which rather astonished our Northern friends, and many were the reasons given why they secured the order. The only reason, however, was because their bid was the lowest, and the manager of the works, in a letter to MANUFACTURERS' RECORD, stated that they were able to underbid their Northern competitors and still make money on the contract, because of the cheapness of iron and lumber, the former being made in Roanoke but a few hundred yards from the works, and the latter obtained in abundance in adjacent forests. In Richmond there are two immense plants. The Richmond Locomotive and Machine Works, one of the largest and best equipped works in the country, has recently gone quite extensively into locomotive building, having for many years been engaged in making logging locomotives, engines and general machinery. The magnitude of these works and their perfect equipment astonish nearly every visitor. The Tredegar Co., of the same city, likewise have a magnificent car plant in connection with their shops and rolling mill, having an annual capacity of about 2,500 cars, 35,000 wheels and 11,000 axles. Mr. J. R. Johnson, of Richmond, has axle works with an annual capacity of 45,000. The Virginia Iron Works, of Norfolk, do some locomotive building.

In the Carolinas there is only one car works, the North Carolina Car Co., which employs about 75 hands or over, and has an annual capacity of 300 cars, including plain passenger coaches. Georgia has no car works at all, except those owned by railroads and kept in operation on their own work.

Alabama, in car building as in iron making, seems destined to take the lead of the whole South. This is partly due to the general progress and development of the State, which has attracted such world wide attention, and partly to the great production of all grades of iron suitable for every character of car work from the wheels and axles to the castings, and the abundance and cheapness of timber, both oak and pine. Up to about one year ago Anniston had the only works in Alabama not owned by railroads, building cars. Now, besides the Anniston works, the United States Rolling Stock Co. are removing their immense plant from Urbana, Ohio, to Decatur and are erecting their new buildings as rapidly as possible. These

works will make about 15 cars a day, including the best passenger cars. Some idea of the magnitude of this plant can be obtained from the statement that there will be 90 buildings in all, frame and brick, with stone foundations, which, if they were all under one roof, would cover an area 1,331x8,625 feet. The buildings, with their extensive yards and system of tracks, and a water tank of 100,000 gallons capacity, will cover 49 acres. Every description of railway cars will be manufactured here. There will be 500 men employed at first, to be increased to 1,000 later on. At the same place the Decatur Car Wheel Co. is making wheels, and the Louisville & Nashville Railroad is building shops which are so large as to be worthy of special mention. There will be 18 buildings of brick and stone, and the number of hands will be even larger than in the Rolling Stock Co's shops.

A few months ago the Anniston car wheel and car axle works and forge and rolling mill, all owned by Messrs. Noble Bros. & Co., and the car works of the Alabama Manufacturing Co. were sold to the United States Rolling Stock Co., of New York, a \$4,000,000 company (the same company which is removing its Urbana works to Decatur), upon condition that these plants should be made the nucleus of gigantic car works to cost \$1,000,000 and to employ 1,000 mechanics or more. Since this great deal, which attracted attention all over the country, was made, the Rolling Stock Company has been getting its plans into shape as rapidly as possible for the erection of the immense buildings that are to be added to those already there.

These works are now employing 600 hands, and the production has been doubled even in the short time since the Rolling Stock Co. took charge. Since that time a large foundry, 130x84 feet, has been completed and another, 160x80 feet, will be constructed at once, while the machine shop has been increased about one-third in size. The axle forge has been more than doubled in capacity and several great steam hammers have been added to the two previously in operation. In all of the departments now running a great deal of new machinery is being put in, but it is in the new buildings that the greatest interest centers.

The most extensive building will be the wood-working shop. This will be over fifteen hundred feet long and one hundred and five feet wide. Some idea of the vastness of this one building may be gained from the fact that it will be nearly one-third of a mile long. In this immense building, which has been designed with the highest skill as a perfect car shop, the timber will enter at one end and passing on from one stage to another in a straight line, be turned out at the other end in the shape of a complete car. From twenty to twenty-five finished cars, from the wheels and axles to the wood-work, will be turned out every day. The motive power in this building will be two twin engines of 350 horse-power each.

Adjoining this building will be the machine and blacksmith shop, nearly as large, or 825 feet long by 105 feet wide. In this shop there will be two Corliss engines, one of 125 horse-power and one of 100 horse-power. In this and also in the wood-working shop will be five car tracks extending through the entire building, supplied with turning tables and all other conveniences for handling work to the best advantage.

Nearby will be the car paint shop, 325 feet long by 96 feet wide, and the car repairing shop, 500 feet long and 96 feet wide. The new rolling mill, which will be constructed in connection with these works, will have a capacity of 40 tons of iron a day. Orders have already been given for over \$100,000 worth of machin-

ery for the enlargements and extensions of these great works, and contracts have been made for the material for the erection of the buildings. A large amount of this machinery has already been received and placed in position, while the balance will be ready by the time the new buildings are completed.

Over 100 tons of pig iron will be consumed daily in these works, while it is estimated that the annual consumption of timber for the 6,000 or more cars that will be turned out will be fully 10,000,000 feet. The annual capacity of these works at present is 3,000 cars, 60,000 wheels and 48,000 axles, but as soon as the new buildings shall have been finished their capacity will be 6,000 cars, 120,000 wheels and about 60,000 axles. The work is now confined to freight cars of all kinds, but passenger cars will be built when the enlargements are completed. Referring to these works, the Anniston Hot Blast says:

"Of the high grade of the wheels and axles turned out by these works it is hardly necessary to speak, for their reputation is national. The simple fact that these axles will bend double when cold without showing a crack or a flaw proves the quality of the iron and the character of the work done."

These works admirably illustrate the diversity of the development of the whole South. The iron ore from the hills encircling the town is turned into pig iron within the city limits, and from the furnaces goes but a hundred yards or so, direct to the car-wheel and axle works, rolling mill and foundry. Here it meets the timber brought from the surrounding country and fashioned into cars, and from these works the completed cars, made of Anniston material from top to bottom, will pass out at the rate of twenty to twenty-five a day.

The United States Rolling Stock Co., as we have said, is a \$4,000,000 corporation, which furnishes rolling stock—engines, passenger and freight cars—to railroads either by outright sale or on the car trust plan. They have been operating large works near Chicago and at Urbana, Ohio. Their decision, after six months or more of exhaustive examination by experts as to the advantages of Anniston and Decatur for building cars, to remove their Urbana works to Decatur and to purchase and enlarge the Anniston works, must undoubtedly have a great effect, not only upon the future of these towns, but upon the whole of Alabama, and to some extent upon the entire South. It is a practical money endorsement of the superior advantages of the South for car works. It has been stated that a company having a large capital have decided to establish car-spring works at Anniston to employ 500 hands, but no particulars of the enterprise are obtainable as yet.

At Gadsden the Elliott Car Co. have just completed very fine works, where they make their own wheels and castings, as well as build the cars. Their capacity is about 2,500 freight cars and 16,800 wheels, giving employment to about 350 hands. These works are admirably located for securing the best grades of iron and timber at the lowest cost. In establishing these works a special effort was made to secure the very best machinery, both in the wood-working and machine department, as Mr. J. M. Elliott, Jr., the general manager, very wisely believes that it would be useless for Southern works to use old machinery and attempt to compete with Northern works having all of the latest and best improvements. Poor machinery will quickly counterbalance the greatest of natural advantages.

The Elyton Land Co. have lately built large car works at Birmingham. At Selma Mr. George Peacock has a car-wheel foundry. Tennessee boasts of the Southern Car Works with a capacity of 2,000 cars a

year, and the Knoxville Car Wheel Co., both at Knoxville; the Chattanooga Car & Foundry Co. and the Wagon Car & Foundry Co., both at Chattanooga. The Knoxville Car Wheel Co. are very large makers of wheels, and have built up an extensive reputation throughout the country. Knoxville is admirably located for all branches of car building, as it has fine grades of iron and is surrounded by an inexhaustible supply of almost every variety of timber needed for any branch of wood-working. Kentucky has the Louisville Car Wheel & Railroad Supply Co. and Swift's Iron & Steel Works and the Louisville Steam Forge Co., the latter two making axles. In Texas the Marshall Car Wheel & Foundry Co. have an annual capacity of 35,000 car wheels, and at Houston John F. Dickson has recently established car-wheel works, known as the Houston Car Wheel Co. West Virginia has extensive car works owned by the Ensign Manufacturing Co., of Huntington, the annual capacity being about 4,000 cars, 80,000 wheels and 14,000 axles.

RAILROAD PROGRESS.

The Rapid Growth of the Railroad Interests of the South.

A Great Increase in Mileage.

Although the mineral resources of the South and its vast forests have attracted universal attention and drawn millions of dollars of capital to this section for investment, yet the development of its railroad interests has received still greater consideration and absorbed many times as much money. "This," says a recent writer, "is the most commanding theater of capital, and strikes the eye of the world not only for its colossal combinations of money, but the prestige of its participants. The capitalists of Europe and the United States, who have been so largely interested in building new railroads and improving old ones throughout the whole South, have added untold and innumerable momentum to the progress of that section. While they may not have led the way in starting the South on her wonderful speed of development, they have largely added to and confirmed—sealed, as it were—the confidence of the civilized world in the eligibility of the South as a field for investment and enterprise; and the South owes an immense debt of gratitude to these monetary magnates who have stamped with the golden seal of their capital the indelible impress of their confidence. The logic of confidence in the South's progress is enunciated in the golden argument of capital, and is voiced in the fierce rhetoric of thunderous and clattering railroad trains. And these roads are bands of iron to bind our union in the bonds of an indissoluble fraternity; and the cogency of common interest is added to the kindest friendship."

The magnitude of the investments made in Southern railroads since 1880 are almost beyond comprehension. In seven years and a half 18,000 miles of new road, not counting sidings and switches, have been laid in the fourteen Southern States. This is only 2,000 miles less than the entire railroad mileage of the South in 1880. At that time the mileage was 20,612 miles, while at present it is about 38,500 miles. What a tremendous increase! In less than eight years the gain has been nearly 100 per cent., which is a far larger percentage of increase than even the Western States have made. No stronger evidence of the reality of the stupendous advance of this section could be asked than these figures give. The statistics of railroad mileage as recently given in the MANUFACTURERS'

RECORD are worth republishing in this connection:

MILES OF RAILWAY IN EACH STATE AND TERRITORY.

State or Ter'y.	1850.	1860.	1870.	1880.	1887.
Massachusetts	245	478	786	1,005	1,179
New Hampshire	407	551	738	1,015	1,073
Vermont	320	554	614	934	947
Massachusetts	1,035	1,284	1,480	1,915	2,069
Rhode Island	68	108	136	210	210
Connecticut	408	601	748	983	976

New England... 5,507 3,660 4,494 5,088 6,454

New York	1,361	2,688	3,908	5,991	7,576
New Jersey	206	560	1,125	1,684	2,079
Pennsylvania	1,240	2,397	4,456	6,121	7,093
Delaware	39	127	197	275	335

Middle States... 2,846 3,567 5,006 14,141 17,876

Maryland	259	386	671	1,040	1,243
Dist. of Col'bia	97	354	397	691	1,108
Virginia	284	1,379	1,449	1,993	2,774
North Carolina	283	927	1,178	1,486	2,397
South Carolina	289	973	1,130	1,487	2,018
Georgia	643	1,420	1,845	2,459	3,618
Florida	21	408	440	518	2,111
Alabama	183	743	1,107	1,843	2,801
Mississippi	75	868	990	1,127	2,210
Louisiana	80	335	420	652	1,446
Tennessee	1,253	1,498	1,843	2,267	2,876
Kentucky	78	334	1,017	1,530	2,379
Arkansas	31	285	859	2,476	2,830
Texas	307	711	3,244	8,330	

South's States... 9,292 13,198 20,612 36,980

Ohio	575	2,946	3,538	5,798	7,606
Michigan	348	779	1,438	3,038	6,328
Indiana	298	1,379	2,177	4,373	5,813
Illinois	111	2,929	4,783	7,781	9,597
Wisconsin	30	925	1,395	2,155	3,266
Minnesota	30	1,008	2,351	3,019	5,019
Dakota Ter.	...	...	65	1,295	4,440
Iowa	655	2,083	3,400	5,191	8,191
Nebraska	...	...	705	1,953	4,076
Kansas	...	...	1,301	3,400	5,119
Missouri	...	...	817	2,000	3,965
Indian Territory	...	...	...	289	910
Colorado	...	...	157	1,570	3,768
N. Mexican Ter.	...	...	...	758	2,337
Wyoming Ter.	...	...	429	512	911
Idaho Ter.	...	...	...	206	865
Utah Ter.	...	...	257	840	1,245
Montana Ter.	...	...	...	106	1,663

West States, etc... 11,053 23,590 48,486 81,236

Nevada	...	...	393	739	954
California	...	...	23	995	3,677
Arizona Ter.	...	...	...	349	1,050
Oregon	...	...	159	508	1,267
Washington Ter.	...	...	...	289	997

Pac. States, etc... 23 1,677 4,080 7,654

Grand total... 9,001 30,606 52,865 93,301 150,500

The increase in the South from 1880, as shown by these figures, up to the end of 1887 was 16,300 miles, but since the first of the year over 1,600 miles of additional track have been laid, bringing the present total mileage up to about 38,580 miles.

The increase and the percentage of increase in each section between 1880 and 1887 were as follows:

	1880.	1887.	Increase	Per cent.
Miles.	Miles.	Miles.	incr.	per cent.
New England	5,507	6,454	947	17.2
Middle States	2,846	17,876	15,030	528.4
Southern States	20,612	36,980	16,368	79.4
Western States	48,486	81,236	32,750	67.5
Pacific States	4,080	7,654	3,574	87.6

These figures show that the percentage of increase in the South was 79.4 per cent. against 67.5 per cent. in the Western States. This is a most astonishing fact, in view of the tremendous growth of the great West, to which the millions of foreign immigrants that have landed in this country have mainly gone. The South, with but little immigration, and not yet recovered from the poverty entailed by the most disastrous war in the history of the world, is making a greater rate of progress in railroad building than even the rich and powerful West. In 1880 the total mileage of the country was 93,301 miles, and of this 20,612 miles, or 22 per cent., were in the South, while in 1887 the South had 36,982 miles out of a total of 150,502, or 24.5 per cent.

The average actual cost of construction and equipment is not less than \$25,000 a mile, and at this rate the 18,000 miles of new road built since 1880 represent a cash investment of \$450,000,000. An immense sum as this is, it is yet probably less than the actual amount expended in building and equipping new roads. It may safely be raised to \$500,000,000.

The amount invested in building new roads is, however, but a part of the full sum expended during the last seven years in Southern railroad development. Old roads have been improved at an enormous outlay. Thousands of miles of iron rails have been replaced with steel, new and better bridges have been built, the rolling stock has been greatly increased to meet

the ever increasing volume of freight and passenger traffic, and other improvements made, the whole aggregating probably not far from half as much as the cost of the new road constructed. Poor's Railroad Manual, the standard authority on such matters, gives some statistics from which we compile the following:

COST OF RAILROADS AND THEIR EQUIPMENT.

States.	1886.	Dec. 31, 1886.
Maryland	\$ 93,330,155	\$ 94,607,647
Virginia	193,148,636	111,160,670
North Carolina	46,383,618	23,807,934
South Carolina	34,104,169	30,484,656
Georgia	81,603,578	49,676,793
Florida	41,593,007	6,495,000
Alabama	70,000,384	78,169,210
Mississippi	10,440,581	8,176,079
Louisiana	85,816,888	44,860,340
Tennessee	154,250,255	40,600,741
Texas	337,330,888	300,171,143
Arkansas	20,547,761	18,438,045
Kentucky	158,543,388	69,201,891
West Virginia	31,498,999	11,700,602

Total... \$1,276,880,808 \$679,804,758

In these figures Poor's Manual has evidently made a mistake in Alabama, as the cost of the railroads in that State in 1886 is given as less than in 1880. Later statistics than these are not yet obtainable. They show that from 1880 to 1886 about \$600,000,000 were added to the investment in Southern roads. Since 1886 about 5,000 miles of new road have been constructed in the South, and at an average of \$35,000 a mile this represents \$175,000,000, to which should be added the cost of improving old roads during 1887 and 1888. Adding the cost of new road and the improvements to old ones since 1886 to the \$600,000,000—the amount of increase between 1880 and 1886—and it will be seen that not less than \$750,000,000 have been expended upon the railroads of the South in the last eight years. These figures are almost beyond comprehension. Great though as they are, the next eight years will show a still more stupendous development.

A COMPLETE census of the manufactures of New Orleans has been compiled by the Times-Democrat, and the reports show how greatly that city has advanced. In 1880 New Orleans had 915 manufacturing establishments with a capital of \$8,565,303, employing 8,404 hands and turning out \$18,808,909 of products, while at the present time there are 2,185 factories having a capital of \$21,667,670. The number of hands has increased to 23,865 and the value of the products to \$41,508,546.

PROSPERITY has attended the publication of Light, Heat & Power, and it will hereafter appear every week. This excellent publication is devoted to the gas industries as well as to electric lighting, and is edited and managed by Geo. W. Graeff, Jr., a journalist of great experience. The office is 411 to 413 Walnut street, Philadelphia, Pa.

THE "getter up" of the three pamphlets just issued by Sadler's Bryant & Stratton Business College, of this city, is undoubtedly a genius in the advertising line who fully understands how to "catch the eye" and command attention. These pamphlets will prove of interest to all who contemplate attending a business college.

THE assessed value of property in Georgia foots up \$357,863,331, an increase of \$15,258,002 over 1887, and a gain of \$123,000,000 in nine years. This shows how the wealth of the South is increasing.

SOUTHERN IRON.

The Wonderful Growth of the South's Iron Interests and Its Effect Upon Railroads.

A Gigantic Industry Rapidly Expanding.

The Brilliant Promise of the Future.

The development of the iron interests of the South during the last few years has been so rapid as to attract universal attention. While other lines of manufactures have greatly prospered and made marked progress until throughout the length and breadth of the land, new enterprises have been started, not simply by the hundred, but by the thousand, yet the iron business has commanded the widest attention and has been more generally discussed than any other industry. This is not surprising when it is remembered that it was but a few years ago when the iron makers of the North ridiculed, first, the possibility of the South ever becoming a large iron producer, and when this was proved to be a mistake, then the possibility of the South ever becoming a serious competitor with Pennsylvania in the iron trade of the country, and shipping iron North, was persistently claimed to be absurd.

During the severe depression in the iron business in 1884 and 1885, when many Northern furnaces were compelled to go out of blast, because they could not make iron and sell it at the prices then ruling without a heavy loss, Alabama and Virginia furnaces commenced to invade Eastern markets more freely than ever before. But few Northern iron makers then believed it possible for Southern furnaces to ship their iron East, paying from \$3 to \$5 a ton freight, with any profit, and it was repeatedly stated that it was only a question of time how long they could stand what was said to be a heavy loss on every ton thus shipped. Month after month passed by, and instead of Southern furnaces failing, they continued to give every evidence of prosperity, while the men who had had the longest experience in the business, and who it was said must be losing money, went on increasing their production by building new furnaces. This was a phase of the matter which the skeptics could not quite understand, but still they were not fully converted and various excuses were found to account for the new furnace projects. For a while they credited them to "land speculations," "corner lots," "town booming," and such like things, declaring that it was a great bubble which would soon be pricked. About that time, Mr. Samuel Thomas, of the Thomas Iron Company of Pennsylvania, which is usually supposed to virtually control prices on all Pennsylvania iron, so extensive are its operations, settled down in Alabama after carefully investigating for himself the resources of that State, and commenced the building of one of the finest furnace plants in America. This was an argument against which the Northern skeptics could bring nothing. The fact that the leading iron maker of Pennsylvania, after close investigation was willing to back his judgment as to the future of Alabama iron, to the extent of a million dollars, convinced the iron men of the North that it would be folly to attempt to ignore the possibilities of the South in this direction any longer.

The development of the South's iron interests has not been confined simply to the making of pig iron. Not content to make pig iron alone, to be shipped North and there turned into the finished product and reshipped South in the shape of stores,

agricultural implements, car wheels, iron pipe, and the thousand and one other articles into the manufacture of which pig iron enters, the South is very wisely diversifying its industries by preparing to consume at home the product of its own furnaces, and so great is the progress in this direction that it is already producing almost every variety of goods from pins and tacks to locomotives. The double freight and the attendant expenses are thus saved while Southern labor receives the benefit of the work afforded in these diversified industries. A large amount of Southern iron will continue to find a market in New York, Pennsylvania and other Eastern States, as well as in the West, and transportation companies will continue to increase their facilities for this business. The recent launching at Chester, Pa., of a three hundred thousand dollar steamer to ply between Savannah and New York, built with a view to the handling and carrying of pig iron, is one indication of this. The Georgia Central Railroad, which now owns a line of steamers between the two ports just named, has recently pushed its direct rail lines into the heart of the Alabama iron region, and seeing that to its great traffic of Southern agricultural products, it was now to add the shipment of immense quantities of Southern mineral products, it has commenced to prepare for the business by the building of this splendid steamer, to be followed by others, designed especially for that purpose. But while it is true that considerable Southern iron will go North, yet there will be an ever increasing home consumption. Rolling mills, pipe works, car wheel and axle works, foundries and machine shops are multiplying so rapidly that instead of the South being dependent upon other sections for the product of such works, it will soon invade the North and West, not simply with pig iron, but with the finished goods.

According to the United States census report of 1880 on iron and steel manufacture, prepared by Mr. James M. Swank, the noted expert, who is secretary of the American Iron and Steel Association, "the average distance over which all the domestic iron ore which is consumed in the blast furnaces of the United States is transported is not less than 400 miles, and the average distance over which the fuel which is used to smelt it is transported, is not less than 200 miles. From the ore mines of Lake Superior to the coal of Pennsylvania is one thousand miles. Connellville coke is taken 600 miles to the blast furnaces of Chicago and 750 miles to the blast furnaces of St. Louis." Over one million tons of ore are now annually imported at Baltimore and Philadelphia from Spain, Africa, the island of Elba and Cuba, and shipped hundreds of miles into the interior to the furnaces of Pennsylvania.

Against this long transportation of ore and fuel to Northern furnaces averaging 400 and 200 miles respectively, with the heavy freight attendant upon it, the furnaces of the South have the advantage of ore, coal and limestone almost at their very doors, and in such close proximity that these three materials can truthfully be said to be side by side. There is no expensive transportation to bring them together at the furnace, for nature has seemingly done her best for this favored territory, as though she intended that here should be the most advantageous point in all the world for the production of pig iron.

In the Alabama iron regions the furnaces are literally surrounded by inexhaustible supplies of ore, coal and limestone, the transportation in some cases being but a few hundred yards. This point is enforced in a letter from Mr. R. W. Raymond, a well known mining engineer and secretary of the American Institute of Mining Engineers, which held its last

meeting in Birmingham. After investigating the advantages of the Birmingham district, Mr. Raymond wrote:

"Those who had not previously visited the district were impressed with its remarkable advantages for the production of cheap iron. The ore, coking coal and excellent limestone are in contiguity, and it is figured that the total cost of material at furnace in the Birmingham district will average about \$1.12½ per ton of iron produced, as against \$4 and \$5 in the Lehigh and Schuylkill valleys." Here is an admitted difference of between nearly \$3 and \$4 a ton, and in many cases the margin is still wider.

As to the cost per ton of iron making in the South, there are so many contingencies to be taken into account that exact figures cannot be given, and we prefer not to use Southern estimates which might be charged with being biased, but to take the testimony of Northern experts. Conservative authorities have put the average as at least \$5 less than the average in Pennsylvania. Mr. R. P. Rothwell, C.E.M.E. of New York, editor of the Engineering and Mining Journal, a high authority in metallurgical matters, after a close personal investigation, estimated that the total cost of making iron in certain parts of Alabama, exclusive of interest on capital or profit on mining would be about \$8.30, and even this he said had been "bettered," and enough had been done to show that iron could be made there at a figure not exceeding \$8 a ton, every expense included. In Mr. Rothwell's estimate he allowed for 1½ tons of coke at \$2 a ton or \$3.50 for fuel, but since then it has been demonstrated by actual furnace work at Ensley that one ton of coke can be made to produce a ton of iron, a saving, the importance of which can readily be understood if steady work shows it practicable, but even if this should not prove possible at all furnaces or on an average, yet is undoubtedly true that a considerable reduction can be made from the 1½ ton estimate.

The Iron Age, the standard Northern authority on iron matters, recently admitted, after its editor had spent some time in Alabama, that iron is made there as low as \$10.50 to \$11 a ton, "including fair allowances for interest on plant, a moderate royalty charge on ore and coal for exhaustion of lands, and a safe margin for ordinary repairs, replacement, taxes and cost of water. Accepting," says the Age, "the higher figure, and making allowances for freights, commissions, insurances, we find the furnace men of the Birmingham district can lay down their iron for the average of the grades without suffering any pressure at \$15.75 to \$16 at New York; at \$16 to \$16.50 at New England points and at \$15.50 to \$16 at Cincinnati. Some of them can do it more cheaply; but at the figures named, with plants run fairly well, and producing about 2,000 to 2,200 tons a month, as the majority of them do, the makers in the district would meet the market without suffering. In other words, when standard irons are selling at tidewater at \$15.50, \$16.50 and \$17.50 respectively for gray forge, No. 2 and No. 1, Southern irons could still hold their own." And then after contrasting some of the advantages and disadvantages of the furnaces in the two sections, the Age closes with the following very strong statement: "But dealing with the industry as it exists to-day, a candid survey of the situation will lead to the admission that if it should come to a struggle between the furnaces in eastern Pennsylvania, New Jersey and New York, which produce chiefly foundry brands for the open market and the makers of the South, no inconsiderable number of the former would be unable to survive very long."

Hon. Abram S. Hewitt, whose firm of Cooper, Hewitt & Co. is one of the largest

iron manufacturing concerns in the country, in speaking of Alabama once said:

"It is the only place upon the North American Continent where it is possible to make iron in competition with the cheap iron of England, as measured not by wages paid, but by the number of days' labor which enter into its production. The cheapest place on the globe until now for the manufacture of iron is the Cleveland district, in Yorkshire, England. The distance of the coal and iron from the furnaces there averages about 20 miles. Now in Alabama the coal and the ore are in many places within half a mile of each other. This region, so exhaustless in supplies, so admirably furnished with coal, so conveniently communicating with the Gulf, will be of infinitely more consequence to us for its iron than it has ever been for its cotton. I think this will be a region of coke-made iron on a scale grander than has ever been witnessed on the globe."

And Col. A. K. McClure was equally as strong when he wrote of the same State that: "No citizen of the North of fair intelligence can review the slumbering wealth of Alabama and the waterways which offer the cheapest transportation without accepting the conclusion that the next generation will see this State an iron and coal center equal to if not surpassing Pennsylvania. * * * It is idle for Pennsylvania and other great iron and coal-producing States to close their eyes to the fact we have reached the beginning of a great revolution in those products. No legislation, no sound public policy, no sentiment can halt such a revolution when the immutable laws of trade command it; and the sudden tread of the hordes from the Northern forest upon ancient Rome did not more suddenly threaten the majesty of the mistress of the world than does the tread of the iron and coal diggers of Alabama threaten the majesty of the Northern iron and coal fields. * * * These lessons come upon us plain as the noonday sun, and it is midsummer madness not to read them understandingly. We cannot war with destiny; we cannot efface the beneficent gifts of Him who leads the waters to the sea and sends them back in the dews and rains of Heaven. Alabama has been gifted far beyond even our boasted empire of Pennsylvania, and only the Southern sluggard has hitherto given the race to the North. Now there is a new South, with new teachings, new opportunities, new energies and manifestly a new destiny, and the time is at hand when a large portion of the great iron and coal products of the country which enter competing centers will be supplied cheaper from Alabama than from any State in the North. How Pennsylvania will solve the problem I do not assume to decide, but the logical result would be the transfer of the portion of the iron industry that can best prosper here (in the South) from the North to the South, just as the spinning and weaving of the home consumption of cotton must soon come to the cotton fields, and the better water power and climate which they furnish."

Such is the testimony of Northern experts. It may be well to add to this a few facts from the history of two Alabama iron companies, to prove that these statements are not visionary, but that their correctness can be demonstrated by the results of years of work. The Woodstock Iron Company, which was organized at Anniston in 1872, passing through all of the severe depressions since then, has two charcoal furnaces in operation, making about 20,000 tons of iron a year. Their records show average net profits after paying all expenses of repairs, betterments, etc., of over \$120,000 a year. They have purchased about 60,000 acres of the choicest mineral lands in the State, and are now spending \$500,000 in building two coke iron furnaces to pro-

duce 100,000 tons of iron a year, and yet their boast is that they have paid for everything in cash, do not owe a dollar, have not issued a note or a bond, and do not even discount the notes received in payment of their iron. What is the secret of their success? It is the abundance of the raw materials and their proximity to the furnaces. Good management is of course understood, as without that even Southern furnaces with all their advantages cannot prosper.

Anniston is literally built on iron ore, and in cutting streets through the hillsides large masses of fine ore are taken out and sent to the furnaces. Within the city limits there is a great hill, almost a mountain side of iron, from which the Woodstock Company have been digging ore since 1873, having taken out more than 1,000,000 tons, and yet they have scarcely leveled down more than 7 or 8 acres. There is no delving into the bowels of the earth to bring up ore by expensive machinery. It is only necessary to dig it out of the hillside and dump it into the cars. So abundant is this ore, that the people there boast that they have the only railroad in the world ballasted with iron ore, and that, too, ore of a fine quality, analyzing 55 per cent. of metallic iron; the ore having been used on a part of this road because it was about the cheapest ballast that could be had. This wonderful supply of ore is by no means confined to that one town. Dozens of other places, some with furnaces and some without, are equally as abundantly blessed.

A few months ago Mr. Alfred L. Tyler, the president of this company, in a private letter said: "We have a demand for all the iron we can make, and have sold several thousand tons ahead. Our shipments have taken every car the railroads can supply us, and we have not had as many cars furnished us as we needed. At the present time, notwithstanding car iron is very low, our two furnaces are earning over \$120,000 per annum. Two new coke furnaces are going ahead very rapidly. On an annual production of 75,000 tons, which is 25,000 less than their estimated capacity, they will earn net \$260,000, putting earnings on a basis of the lowest price for iron in the Cincinnati market touched since 1890."

This is probably the most important statement yet made as to the cost of producing iron, coming as it does from such high authority and from a company that has been so signally successful. These are certainly remarkable figures, and they demonstrate what the South can do in the way of making iron.

The two coke furnaces that this company is now building will have a capacity of over 100,000 tons a year, but allowing for stoppages and other drawbacks, and putting their annual production at 75,000 tons, they will, according to Mr. Tyler, earn \$260,000 a year or \$3.50 a ton, not on the basis of good prices, but on the basis of the lowest prices touched by iron in the Cincinnati market since 1890.

Mr. E. C. Pechin, M.E., of Cleveland, Ohio, the iron expert whose recent letters to the Iron Trade Review on the iron interests of Alabama attracted so much attention, stated that the foundations of the engine house of one of the Clifton furnaces, standing, as it does, at the foot of the ridge, are on solid ore, and that this ore does not cost over 60 cents a ton delivered to the furnace. As this ore analyzes 55 per cent. and over of metallic iron, and as the charcoal for fuel costs but 7 cents a bushel, Mr. Pechin was right in saying that "Northern iron masters can calculate with a good deal of precision what it costs to make car-wheel iron in this favored spot."

The last annual report of the Tennessee Coal, Iron & Railroad Company, which owns the two Alice furnaces at Birmingham, shows that though the larger furnace

was out of blast for five months, undergoing relining and repairs, the cost of which was charged to current working expenses, yet the net profits of these two furnaces for the year were \$183,315.29. Their estimated aggregate capacity is 60,000 tons a year, but as the larger one was idle for five months they probably did not make at the outside over 40,000 tons of iron last year. These two illustrations will show something of the possibilities of money making in making iron in Alabama, better than a volume of theories and estimates.

In 1880 the South produced 397,301 tons of pig iron, and in 1887 929,436 tons. While this increase was very large, yet it will not be until the end of 1888 that the full effect of the great development in this industry will be seen in statistical shape, or its full effect felt in business circles. The immense furnaces upon which the work of construction commenced from twelve to fifteen months ago, are now rapidly being finished, and one after another is going into blast. At the beginning of 1888 there were thirty furnaces building in the country, and of these twenty-five were in the South, nineteen being in Alabama alone. A number of these have since gone into blast while several new ones have been projected. Probably the most noticeable feature in connection with these new furnaces is their immense size, and next to this is the remarkable character of the work, the design of all these companies being to introduce the most perfect appliances and every labor-saving invention regardless of the cost which could help to make them successful as producers of cheap iron. The extent to which this has been carried excites the unbounded admiration of the leading engineers and iron men of the North who have lately been South. It is undoubtedly true that the most perfect furnaces in this country, equipped with every new and good improvement, are the furnaces now building and those recently finished in Alabama. The largest single furnace plant in America is that at Ensley. It consists of four furnaces whose aggregate daily capacity is about 720 tons. The company owning these furnaces has six others, all of large size, but none of them having such great capacity as these four new ones at Ensley.

At Sheffield five furnaces will soon be in operation, their expected aggregate output being 700 tons a day. Four years ago the site of Sheffield was a corn field. The rapidity of its growth may be appreciated from the mere statement that before the coming winter its furnaces will be producing nearly 5,000 tons of pig iron a week. Bessemer, the site of which one year ago was a forest, has just blown in two furnaces to make 250 tons of iron a day; built a \$500,000 rolling mill which will turn much of its pig iron into the finished product, and is now building three more furnaces, and preparing to build two more, thus giving that town, scarcely more than eighteen months old, seven great iron furnaces, completed or under contract. Among other new furnaces in the South, one at Pulaski, Va., which went into blast late in the spring, is averaging an output of 1,000 tons a week; the first furnace of the Thomas plant near Birmingham is making about 125 tons a day. The first of two at Trussville of about the same size will blow in shortly, and work will then commence on the second; a 100-ton furnace is nearly finished at Gadsden; two of about 125 tons daily capacity each are well advanced at Birmingham; two of about 250 tons capacity each, near Baltimore, to use foreign ores, to be followed by two more of the same size; one at Florence, two recently completed at Nashville, one at Decatur, and one at Lynchburg, while several others have been started at Bessemer, Talladega, Atalla, Montgomery and other points, and a number of

new companies are preparing to build; besides, several antiquated furnaces long idle have been remodelled and put in blast.

The new Southern furnaces, which will go into blast this year, have an estimated aggregate yearly capacity of about 1,200,000 tons, but this is on the basis of a steady run for 365 days, with no stoppages on account of accidents or other causes. A safe estimate as to what these furnaces are likely to produce in a year would reduce these figures at least one fourth, leaving 900,000 tons as their possible output during twelve months. In 1887 the South produced 929,000 tons of pig iron, and if to this be added 900,000 tons—the possible output next year of new furnaces—then in 1889 the South will make over 1,800,000 tons of iron. It seems entirely probable that these figures will be reached next year, for even should the new furnaces enumerated fall short of the estimated 900,000 tons, there are a number of others, including five at Bessemer, two at Baltimore, two at Talladega, one at Atalla, one at Paducah, Ky., &c., which have not been included in these figures, but some of which will doubtless be in operation by the summer or fall of 1889, and thus fully make up any deficiency.

That the full importance of the traffic which this iron business will afford to Southern railroads and its influence upon railroad construction in that section may be appreciated, some comparative statistics will best indicate its volume.

It was recently shown in a statement as to the number of tons of freight which two 150-ton furnaces now building would afford the railroads, that they will consume over 1,650 tons of coke, ore and limestone, and produce 300 tons of pig iron a day, or an average of over 6½ tons of freight to every ton of iron made, furnishing on a yearly output of 100,000 tons of iron, 670,000 tons of inward and outward freight to the railroads of that place, equal to 33,500 carloads of 40,000 pounds each. On the basis of 500 pounds to the bale, these two furnaces will furnish as many pounds of transportation as 3,800,000 bales of cotton, or 40 per cent. of an entire 7,000,000 bale cotton crop. It will of course be understood that this freight will not be hauled by the railroads as great a distance as the cotton, the design of this comparison being to show its immense volume. On the basis of this exhibit the 1,800,000 tons of iron to be made in the South next year would furnish over 12,000,000 tons of freight, not counting any of the indirect traffic that would necessarily be developed by the growth of this business. This 12,000,000 tons would mean 600,000 carloads of 40,000 pounds each. It would mean a traffic seven times as great in the number of tons as the entire cotton crop of the South, estimating that at 7,000,000 bales and 500 pounds to a bale. The influence of the wheat crop upon the railroad interests of the country is very sensibly felt, and especially in Wall street, where prices constantly turn on the preliminary estimates as to the probable yield, and yet if the wheat yield of the entire country this year should be about 400,000,000 bushels, as the estimates now make it, it would be only 12,000,000 tons, or just the same as the tonnage of the South's iron business of next year. The immensity of 12,000,000 tons of freight cannot probably be more forcibly impressed upon the mind than by the mere statement that if it were to be shipped by water, its transportation would furnish a 3,000-ton cargo to 4,000 ocean steamships.

It has already been said that the South is building diversified industries so rapidly that the consumption of pig iron there will be very greatly increased. This point is scarcely appreciated by the Northern people, who have heard so much about new furnaces that they have overlooked the new rolling mills, car works, pipe

works, stove foundries, machine works, agricultural implement factories and kindred enterprises. Comparatively few outside of Virginia know that in Roanoke, a town which was but a small way-station five or six years ago, there are car and locomotive works which employ 1,000 hands, and which not only build rolling stock for Southern roads, but compete with Northern works for furnishing cars to Northern railroads. As we go South other enterprises of fully as great magnitude are found in a number of places which have grown up since the development of the iron trade commenced. In the older places, such as Richmond, Louisville, Knoxville, Nashville, Chattanooga, Memphis and many others, there are many diversified iron industries that are steadily expanding their trade. These are already known. When we come to the newer towns, the ones that have attracted the greatest attention as builders of new furnaces, the magnitude of the diversified iron enterprises, is seen. Birmingham's rolling mills have pushed their product even into the Chicago market; its stove works have furnished stoves to Mexico; its pin and tack factory ships its goods in all directions, while car works and machine shops help to swell the home consumption of the iron which its many furnaces produce. With the building of the two furnaces at Bessemer one of the finest rolling mills in the country was also constructed, so that when the furnaces went into blast the rolling mills were about ready to start up. In Decatur diversified iron enterprises have received far more attention than new furnaces, and the consumption of pig iron there will far exceed the production. Among these new industries in a town which one year ago had about 1,500 inhabitants, there are railroad machine shops which will employ probably upwards of 1,000 hands in building and repairing cars, car works that are being moved from Ohio which will employ 500 hands at the start, to be increased to 1,000 later, iron bridge works and machine shops for building engines, boilers, steam pumps, &c. In Anniston the diversity of the South's iron development is admirably illustrated. The six furnaces owned there, though their capacity is about 3,000 to 3,500 tons a week, will not be able, it is said, to make enough iron to supply the consumption in that town, thus probably necessitating the building of additional furnaces to meet the local demand. The largest consumers of iron there will be the pipe works, claimed to be the most extensive in the world, which will consume 300 tons of pig iron a day, a million dollar car plant, with a capacity of 25 complete cars a day, which includes two immense foundries for castings, a rolling mill, car-wheel and axle works and machine shops, the requirements of which will be from 100 to 200 tons of iron daily, a horse shoe factory to turn out over 4,000 kegs of shoes a week, boiler and engine works, steel bloomery, machine shops, &c. This rapidly increasing diversity of Southern industrial growth is seen from Maryland to Texas, and is being forcibly illustrated in Birmingham, in Chattanooga, in Decatur, in Roanoke, Gadsden, Anniston, and elsewhere. The advantages of the South where the raw materials are so abundant and in such close proximity for this diversified and permanent development, are well illustrated in the mere fact that in the best located places it is only necessary to dig the ore out of the hillside and dump it into the carts. From this ore is made the pig iron. From the furnaces it goes to car-wheel and car-axle works, machine shops and foundries. It was but a few years ago when the machinery necessary for such a gigantic plant as a great furnace could only have been secured in the North or West, but now the South is beginning to build the machinery that is to run these furnaces. In some cases the

boilers and engines are all the product of Southern works, and even the fire brick is made in the South of Southern clay. And then take the great car works that have lately been established, they will build both freight and passenger cars. The lumber obtained in the surrounding forests will furnish the wood work; the wheels and axles will be made from Southern pig iron, and almost everything that is used in building cars will be made right in these works.

Is it possible to better illustrate the increasing diversity of Southern industry and the disposition to carry forward the manufacture of iron from the ore to the finished product, ready for its final use, than by the facts here given?

These are simply a few of the many illustrations which might be given to show what is being done in the development of the iron interests of the South. This is not a one-sided and hence an unstable growth, but is a well rounded development, covering every phase of this great industry, from the mining of the ore to its conversion into the pig iron, and thence through all stages of progress until it is turned out as the finished product. The far-reaching influence which this rapidly growing industry must inevitably exert upon all the business interests—railroad, financial, commercial and industrial—of the entire country must command thoughtful study. It is not within the scope of this article to attempt that. The aim of the writer has been simply to present in as brief a manner as possible the most striking features of the South's iron industry, to show on what its growth is based, the profitability of the business when well managed, and the magnitude which it is now assuming, as the fires of one great furnace after another are lighted.

Locomotive Works Needed South.

Notwithstanding the fact that the South has upwards of 38,000 miles of railroad track, or one-fourth of the entire mileage of the country, and must inevitably become the center of railroad activity, there is not a single plant in that whole section from Maryland to Texas exclusively devoted to building locomotives, with the exception of a small one in Maryland making narrow-gauge engines. Here is a splendid field for enterprise. The South is the proper place for building locomotives, at least to meet the home demand. It is true that Northern works have reached a high state of perfection; that they are supplied with all the latest improvements to lessen the cost of manufacture, and that they have established reputations. But these facts do not make it inadvisable to establish works in the South. They do, however, make it necessary that to be successful new works to be started in the South should be on a large scale, with an abundance of capital, located where the raw material can be had to the best advantage, and where the highest class of skilled mechanics can find pleasant and comfortable homes. Under these circumstances there is no doubt but what a large locomotive building plant could be established and profitably run in the South. There are so many advantages possessed by that section for this industry, and the demand for locomotives for Southern roads is so steadily in-

creasing, that a great future awaits the first well-equipped locomotive works in the central South. It would almost certainly become to the South what the Baldwin works, of Philadelphia, are to the North. The opportunity is one which invites capital.

On this point it will be interesting to quote the views of some of the railroad people as expressed in letters to the MANUFACTURERS' RECORD:

G. GUNBY JORDON, general manager of the Georgia Midland & Gulf Railroad Co., Columbus, Ga., says: "The South is the proper place for well-equipped car and locomotive works. Cheap lumber, iron and labor here and the nearness to purchaser, should make it easy for such works to get all Southern railroad business at least. The success of Anniston and Knoxville car works and the Richmond Locomotive Works—in locomotive building—proves the experiment successful."

MR. H. R. DUVALL, receiver of the Florida Railway & Navigation Co., 34 Nassau street, New York, says: "I see no reason why a well-equipped Southern works cannot furnish cars to Southern roads at a lower cost than Northern works, the item of freight on yellow pine to Northern works and the cost of getting cars to the South after building being very considerable. I think that a locomotive works at some central point in the South would be able to compete with Northern works to good advantage. The freight on a locomotive from any of the Northern locomotive works to points south of the Ohio river is quite an item in the cost of the locomotive."

D. M. ROGERS, general manager Talladega & Coosa Valley Railroad Co., Renfroe, Ala., writes: "In my estimation, it would certainly pay some one with the necessary capital to start both locomotive and car works in this section of the South. To begin with, all the materials necessary for the work and its completion are to be found right here; yellow pine and hard woods for the wood work, and iron in abundance; plenty of charcoal, coal and limestone, all within easy distance of each other. Much of both wood and iron is cut, mined and shipped to the car and locomotive shops in the North, costing much more for the transportation in a rough state than it would cost if in complete shape. Iron and steel furnaces are already running, and there is material enough in the mineral belt of Alabama to furnish one hundred times the number of furnaces that are now running, and keep them going day and night. There is probably no section of the country where all the elements necessary for the production of a fine quality of iron can be had in such close proximity to each other and at so little cost. I cannot see for a moment how Northern car and locomotive works could hope to compete successfully with Southern works if located right where every portion of their products is produced. Lands can be procured at little cost, and for such enterprises a liberal amount could be raised to assist in the erection of the plant."

H. S. CHAMBERLAIN, president Roane Iron Co., Chattanooga, Tenn., says: "I believe the South an excellent place for building cars and locomotives, and that, owing to cheap lumber and iron, they can be built 10 per cent. cheaper here than in the North."

MR. A. W. ROBINSON, superintendent of the West Feliciana Railroad, Woodville, Miss., says: "It is my opinion that car and locomotive works, centrally and judiciously located in the South, if well managed, could furnish cars and locomotives to Southern railroads cheaper than they could be supplied by Northern factories."

MR. J. W. FAY, general superintendent Cape Fear & Yadkin Valley Railroad, Greensboro, N. C., says: "I think both locomotive and car shops, if built at the South,

could successfully compete with those further North."

M. SWENNEY, general superintendent Kanawha & Ohio Railway, Charleston, W. Va., says: "Unquestionably locomotives and cars could be built as cheaply in the South as elsewhere if such works were established here."

A. J. McAVOY, superintendent Covington & Macon Railroad, Macon, Ga., says: "I think the South a good field for both locomotive and car building, and should be able to sell cheaper than Northern works."

What Decatur is Doing.

Mr. James B. Allen, president of the Southern Lumber Co., of Decatur, is enthusiastic about the future of that place, and in a recent interview in the Montgomery Advertiser, said: "That in sixty days some big things there will start the town on the biggest sort of a boom. A contract has been made for \$45,000 worth of macadamizing of the streets, and the work is being pushed as rapidly as possible. The Land Company is making over \$110,000 worth of improvements—macadamizing all the principal streets and avenues on their property. The company will open up and macadamize Moulton street from the river across town—being about six miles. This is only one street—at the foot of this street are the city docks—and the company will put in a steam ferry, which will be free, so as to draw the trade to this side of rich Limestone country."

A \$50,000 gas plant is to be put in shortly by St. Louis parties. A large and handsome city hall and market-house, two opera houses and numbers of new stores and dwelling houses are going up in every direction, and will soon commence the erection of a \$400,000 cotton mill. The American Oak Extract Works are putting in a 1,200 horsepower engine and doubling their capacity. The blast furnaces just finished will, I learn, be operated in conjunction with charcoal chemical works to their full capacity, and start up September 1st, as well as the car wheel works.

But the dandy is the L. & N. railroad shops situated in South Decatur, the finest shops in the South, covering over fifty-seven acres with buildings built in the most substantial manner of stone and brick. At these shops every day you can see an army of men at work.

Then comes the United States Rolling Stock Company's plant located in East Decatur, and it too will cover as much ground as the Louisville & Nashville shops. This plant is simply gigantic. Hundreds of masons and carpenters are rushing their work ahead and in ninety days this company will be turning out cars by the wholesale. This company received an order recently for seventy cars and have work for six months or a year ahead for the Decatur shops.

We are fully equipped with a fine street car service propelled by Texas mules.

The street car lines are being extended all over the city, and already are ten miles long, and are very liberally patronized. Mr. S. D. Wharton is the manager, and Mr. Wharton, his father, the principal owner.

Our Decatur water works will cost about \$400,000. This company has laid nearly fifty miles of water pipe. Water will be turned on November 1.

Our electric light plant is entirely too small, and will be enlarged at an early day.

The Tavern is as fine a hotel as you can find anywhere; elegant accommodations and most polite attention. Col. Reed is manager. I learned as I left home that many of the rooms were engaged for the next two or three months by Western capitalists, who will be in Decatur in large numbers just as soon as cool weather sets in. So you readily discern that the boom is fairly upon us, and I do not hesitate to say in sixty days at farthest it will be a very difficult matter to get a place to lay your weary head.

Electricity for Street Cars.

It was formally announced a few months ago that the Thomson-Houston Electric Co. had purchased all of the railway patents belonging to the Van Depoele Electric Manufacturing Co. and had also secured the valuable services of Mr. Van Depoele. Previous to this and in accordance with this purpose the Thomson-Houston Co. made great preparations and equipped its factory with every possible facility for entering into the electric railway business. The result of these moves has been remarkable, far exceeding their immediate expectations. Correspondence was opened with almost every railway in the United States, and with many throughout the world in conjunction with the Thomson-Houston International Co. As the result of this, in the brief space of about six months it has already become necessary to still further increase the facilities, which is to be done at once.

The company feel that they are warranted in sparing no pains to make their system the most perfect of any in existence, and taking the combination of their large number of controlling patents relating to the overhead and conduit system, with their reputation for substantial and reliable work, there is no question but what they are destined to occupy a leading position in the electric railway business in a very short time. A visit to their office and their works certainly gives this impression.

It might be of interest to the street railway men to know a few of the roads which the company has already contracted for, and what they propose to do beyond these roads in other fields.

The Lynn & Boston Co., one of the greatest street railway companies in the country, have already started upon the question of electric propulsion, and have equipped a branch summer road at Crescent Beach, Mass., about one mile in length, with a heavy electric car, their intention being to tow two other cars. As this branch connects the termini of two of their horse car lines which did an enormous business in the summer time, this was determined necessary. From the third of July this car has been in daily operation, making three round trips per hour from 9 o'clock in the morning till 10 or 11 o'clock at night. Thousands of people have already been carried, and it is being demonstrated by these means to the public that such a method of propulsion is not only safe and reliable, but much preferable to horses.

There is also at Revere another line which is very nearly completed and will be in operation within a very short time. Besides these there are several other roads in Eastern Massachusetts which are ready to contract with the company for equipment of their line, but owing to delays in securing franchises and rights of way, they will not be in operation this summer.

At North Adams, Mass., the Hoosac Valley Street Railway Co. have contracted with the Thomson-Houston Co. to equip their five miles. Five cars are to be used on the line and work has commenced. This line furthermore contemplates several extensions.

In New York State the Third Ward Railway Co., of Syracuse, have contracted with the company for the complete equipment of four miles of road with the overhead system and the construction of eight motor cars. This company contemplates extensive additions, and there is no doubt but what this city will soon possess one of the finest electric roads in the United States. This road will be in operation the 1st of August, and nearly all the work has already been completed.

At South Scranton the company is also building a 2-mile road, to be equipped with four cars.

In the West an enormous business is developing, and the Western office of this company has found it necessary to enlarge its offices and organize a special corps of electric railroad engineers and officers.

From them we learn that the Des Moines Broad Gauge Railway Company, of Des Moines, Iowa, has contracted for the complete equipment of 7½ miles of their road with the overhead system and the placing of eight cars upon the same. The contract is merely preliminary, and as soon as it is in successful operation a very great increase is to be made.

At Wichita, Kansas, the Riverside & Suburban Railway Co. have contracted for the equipment of two miles of road (overhead system) and the placing of three cars. This also is only a preliminary step for a much larger road to follow.

In addition to these few new contracts, the company is supplying their railway trucks and apparatus for a number of roads already established upon the Van Depoele system. Among these are the Scranton Suburban Railway Co., Scranton, Pa.; Binghamton Railway Co., of Binghamton, N. Y.; N. Y. Aug Cross Town line, of Scranton, Pa. Besides these, the street railway department, through the International Co., have already made shipments of its motors and trucks and apparatus to foreign countries, and from present indications unquestionably a very large business is to be developed in this direction. Outside of these the company have several very large important contracts which are just at the closing point for the complete equipment of some of the railway lines in the largest cities in the country. All this clearly indicates the confidence that the street railway profession have in the reliability and permanency of such work, with the guaranty of a company of the commercial standing of the Thomson-Houston Electric Co.

To secure as thorough a system in railroading as they have in electric lighting great attention has been given to the details by their large corps of talented engineers. They recognize the importance of what the railway men have been reiterating constantly—that it is the little things that delay and annoy just as much as large things; in fact, in street railway work, where you are serving the extraordinarily sensitive and critical public, the little things sometimes mar the big things.

The switching in all its phases has been carefully and thoroughly studied, and with their system of one wire, overhead, using the under-running trolley, there is no problem, it is said, in this direction that they have not carefully gone over and solved. In fact, there are to-day in operation overhead switches which match all types of railway switching. At Ansonia the cars run by each other upon the turnout without slacking speed but very little, requiring no complicated mechanism to be operated by hand. Details of curves and crossings, branches, etc., have also been as thoroughly worked out, and from the numerous drawings and designs which were shown it is hard to conceive of any possible corner of the street railway business that the Thomson-Houston Co. has not pried into.

It is very gratifying to all that have the firm belief that electric railways are to be the exclusive future power to go over with such a powerful company the work which they are doing and to see the preparations which they are making for the future. It is a guaranty to the whole street railway business that the infant days and experimental days of electric street railways is past, and that railway men can now, with perfect freedom from all anxiety, obtain, by dealing with such a company, an electric road which is sure to give perfect satisfaction. In this connection it might not be amiss to mention the fact that some of the most prominent railway engineers in the country are already in consultation with this company with a view to adopting the electrical profession in place of past cable confusions and labors. Cable railways for excessively heavy business on short lines was a vast improvement over horses, but it is claimed that before the electric advance the cable business halts and must inevitably retreat.

THE BOYDEN POWER BRAKE CO.

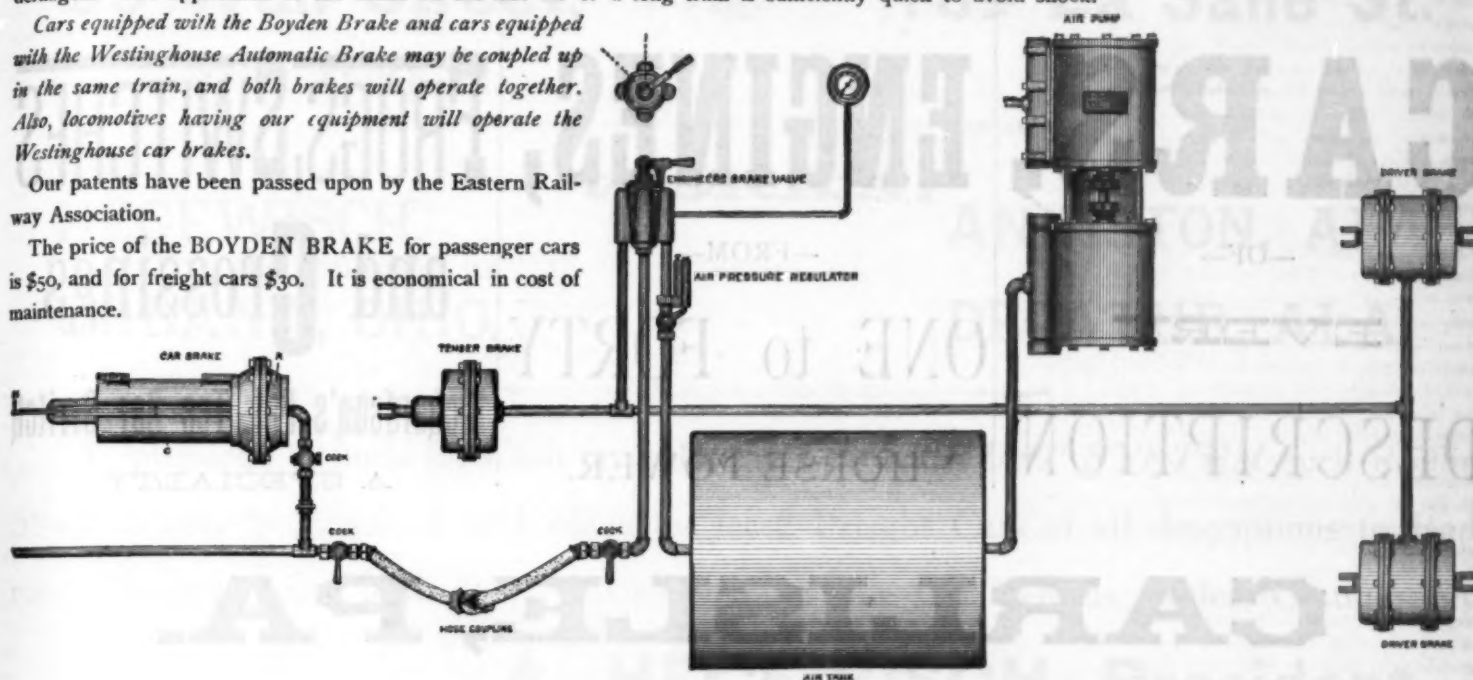
BALTIMORE, MD.

Manufacturers of a New Automatic Continuous Brake for Freight and Passenger Cars; also Driver Brakes for Locomotives. The brake is "automatic," and applies in case of accidental separation of the train, bursting of the hose or any parts of the device pertaining to the air becoming deranged. The application of the brake on the last car of a long train is sufficiently quick to avoid shock.

Cars equipped with the Boyden Brake and cars equipped with the Westinghouse Automatic Brake may be coupled up in the same train, and both brakes will operate together. Also, locomotives having our equipment will operate the Westinghouse car brakes.

Our patents have been passed upon by the Eastern Railway Association.

The price of the BOYDEN BRAKE for passenger cars is \$50, and for freight cars \$30. It is economical in cost of maintenance.



GENERAL PLAN OF THE BRAKE EQUIPMENT.

The Boyden Car Brakes are applied by the pressure of springs, and released, held off and graduated by compressed air under the control of the engineer.

This Brake consists of—

The Air Pump F, which is located on the locomotive.

The Air-Tank J, also on the locomotive, into which air is compressed.

The Air-Pressure Regulator O, which allows only the required amount of air-pressure to pass from the air-tank to the car-brake mechanism.

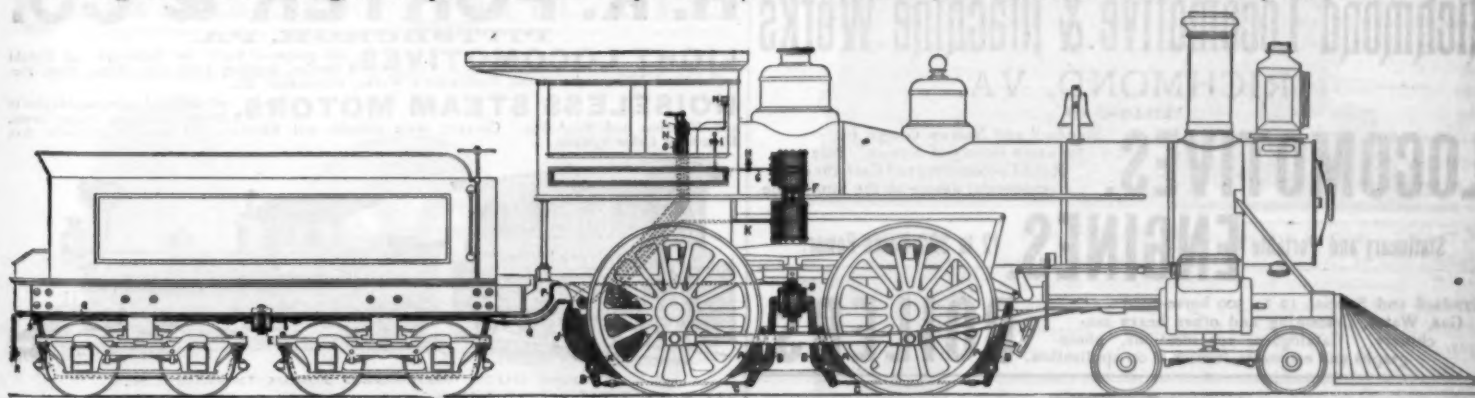
The Engineer's Brake-Valve L, which operates the brakes by controlling

the passage of compressed air from the air-tank through pipes to the car-brake mechanism.

The continuous line of Pipe leading from the air-tank along the cars of the train.

The Hose and Hose Couplings, by which connection is made between the air-pipes on the several cars of a train.

The Car-Brake Mechanism, comprising the springs which apply the brakes; an Expansible Chamber A, which, when filled with compressed air, releases the brakes, and connections with the ordinary brake-levers.



LOCOMOTIVE AND TENDER EQUIPMENT.

The letter A designates the brake-shoes for the driver-wheels, B the levers to which the shoes are attached; each wheel has two shoes, which are applied on opposite sides of the rim, and are connected by a tie-rod C; thus the shoes act on the squeeze principle, which is the most powerful and efficient plan known to retard the revolution of the wheel. It acts without injury to the locomotive, and permits more pressure to be applied without damage than any other form of brake. The levers B are moved by the

force of compressed air in the cylinder D. A similar cylinder E is on the tender. The locomotive and tender-brakes are direct-acting; the car brakes, however, work on the "automatic" principle, and all the brakes are controlled by one valve L.

In addition to the style of driver-wheel brake shown, we are prepared to furnish a brake adapted for consolidation locomotives, drawings and description of which will be furnished on application.

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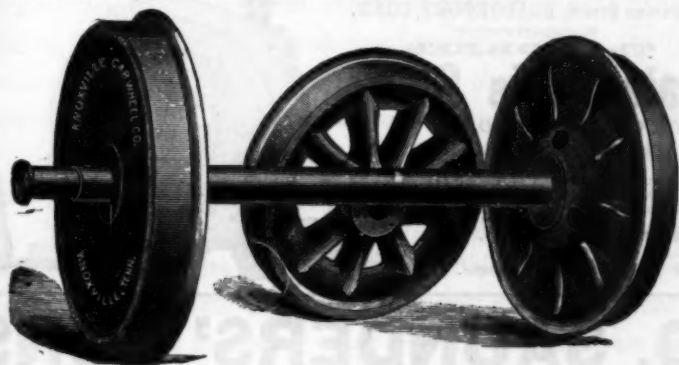
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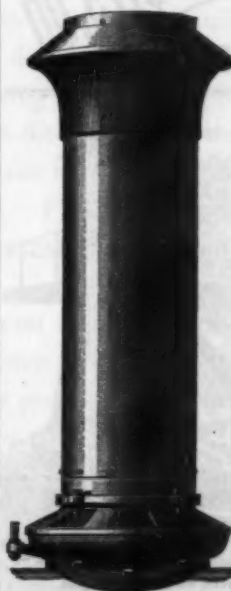
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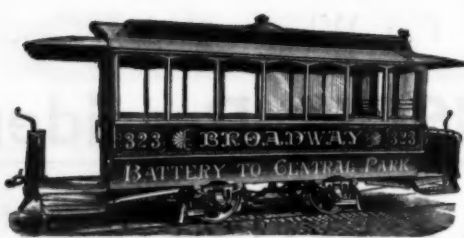
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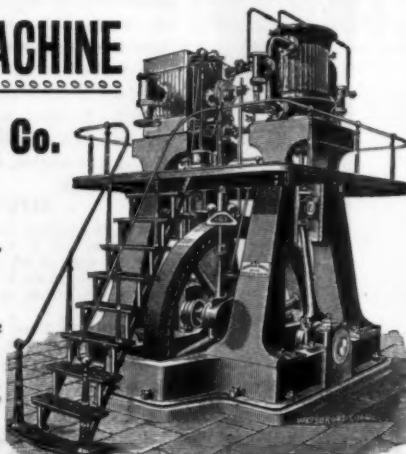
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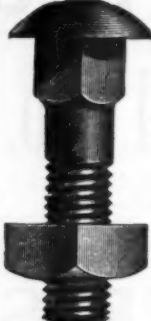
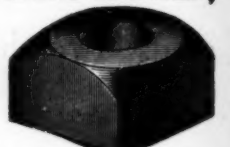
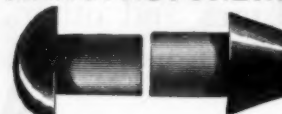
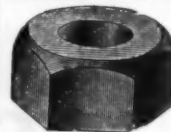
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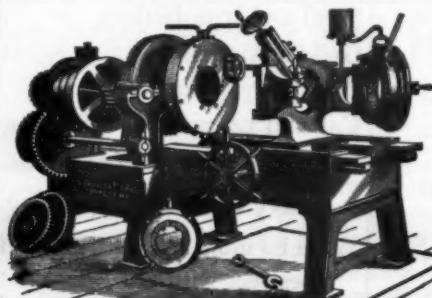
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A RETROSPECT.

THE past year or two have witnessed a wonderful upheaval in the ways, customs and activities of the people of a goodly portion of the State of Alabama. It has chronicled a progress that a decade before had not shown. It was not the discovery of a new truth, nor the development of a new fact, but a sudden and impressive realization of the utility and value of truths and facts known for years.

The mineral section of Alabama (the north central portion) before the civil war was fairly well settled, and had attractions of climate in an even and healthful temperature and a pure, invigorating atmosphere; of fertile valleys and hills adapted to cotton, grain, fruits and pasturage, and an abundant and well-distributed water supply that made its inhabitants contented, happy and prosperous.

The great civil war was a revolution in more senses than that historically attributed to it. It brought out elements that changed destinies. Many years seemed to be absorbed in the process, but the leaven of facts was working, and the development was sudden and startling. In this section the two great factors in the world's industrial economy—coal and iron, which had virtually been the basis of England's great wealth and power, and of Pennsylvania's marvellous prosperity—were found in equal quantity and quality, and surprisingly more available for economic working and reduction. The remarkable development in progress in this section is the result of the impressive realization of these facts.

This development seems rapid, and yet is slow. With natural resources equal, if not greater, than those of Pennsylvania and natural advantages far superior, even at the rate of progress of the past few months, it will be decades before we can approximate to her standard. As in Pennsylvania, so here are certain points where a combination of advantages will center the greater industrial developments; where coal is most abundant and available for working and handling; the ores rich and inexhaustible; limestone abundant; a most eligible site with attractive surroundings; an ample water supply; a fertile contiguous territory; abundant and competitive transportation facilities, and a central location. Such a point is

Bessemer, Ala.

Within a mile of its furnaces the ore is mined and the limestone found in exhaustible beds. Within nine miles, in eight-foot seams, the best of coking coal,—the ore and coal both *mined and delivered at less than one dollar per ton*. Situated in one of the most charming and picturesque sections of the South, on a broad plateau in the famous Jones Valley, twelve miles from Birmingham, midway between Chattanooga and Meridian, Mobile and Nashville, Savannah and Memphis, New Orleans and Louisville, with railroads radiating to each,—seven lines already completed and three others surveyed, two of them under construction.

On the 12th of April, 1887, the first lot was offered and sold in Bessemer. Within a year's time an actual investment or outlay in improvements of over *two million* dollars has been made within its limits, and a population of 3,500 people has located there. Magnificent plants of iron furnaces, iron and steel rolling mills, foundry and machine shops, screw works, planing and drying mills and wood-working factory, fire-brick works, building-brick works, etc., have been erected. Choice business blocks costing from twenty-five thousand to one hundred and twenty-five thousand dollars have been constructed, and nearly four hundred buildings have been completed or are near completion.

Yet Bessemer has not been advertised, for it has grown fully as rapidly as stability of growth and prosperous development would warrant, and it has to its credit a rapidity of growth and development unrivalled in this country.

Bessemer is destined to be a large milling and manufacturing center and prosperous city, for its coal and iron fields are inexhaustible, and its transportation facilities are unexcelled in the South; for nearly all the various manufacturing industries and kinds of business enterprises it affords advantages that cannot be rivalled in this country.

The facts of Bessemer court the most rigid investigation. Facts, not expectations, are suggested to enlist interest and attract attention. In all that may be published under our name concerning Bessemer, the reality and correctness of the statements can be relied upon.

The Bessemer Land and Improvement Co., upon whose property Bessemer is largely built, will promptly furnish information as asked for, and offer substantial inducements in the way of *Sites, Subscriptions, Stock or Loans*, to all industrial enterprises giving remunerative employment to the people.

Bessemer Land and Improvement Company,

WM. BERNEY, President. H. M. McNUTT, Secretary.

ALABAMA'S GREAT MINERAL WEALTH

SURROUNDS THE

★ CITY OF TALLADEGA, ★

Which, according to statistics, is the **MOST HEALTHFUL CITY IN ALABAMA**, and the County Seat of Talladega County.

THE CITY HAS A POPULATION OF 5,000, AND ITS POPULATION IS RAPIDLY INCREASING.

TALLADEGA is on the main line of the E. T. V. & G. Railroad, the A. & A. Railroad, and is the present terminus of the T. & C. Railroad. Work is rapidly progressing on the Birmingham & Savannah Air Line Road, between Birmingham and Savannah, and within twelve months this road will be completed via Talladega from Birmingham to Savannah, which will place Talladega on the direct line from Birmingham to deep water on the Atlantic, making

TALLADEGA ONE OF THE BEST DISTRIBUTING POINTS IN THE STATE.

THE CITY HAS

AN EXCELLENT SYSTEM OF COMMON GRADED SCHOOLS,

With a scholastic population of 500, and **THE MOST COMMODIOUS AND ATTRACTIVE PUBLIC SCHOOL BUILDING IN THE STATE.** The main building is a three-story brick, slate roof structure, well ventilated, heated by steam; has accommodations and seating capacity for 500 pupils. This school is owned and sustained by the city. All branches of English literature, foreign languages, music, the sciences and art, are taught for a nominal tuition. Among other educational institutions are the following:

SYNODICAL FEMALE INSTITUTE, Property valued at \$50,000.

D. D. & B. INSTITUTE, Property valued at \$150,000.

BLIND INSTITUTE, (in course of construction,) property valued at \$150,000.

FOSTER COLLEGE, property valued at \$150,000.

No other city in Alabama has so many educational institutions and so many public buildings.

← TALLADEGA HAS THE MOST COMPLETE SYSTEM OF WATER WORKS IN THE STATE. →

The stand pipe has a capacity of 175,000 gallons, and into this reservoir a supply of fresh, clear, pure water is pumped every day from a large spring located in the heart of the city, which discharges over 2,000,000 gallons per day. The gravity pressure from this system is 90 pounds to the square inch in the business portion of the city. The city has broad streets, well macadamized and shaded with beautiful trees, and is well lighted with a **SUPERIOR QUALITY OF GAS**. Sixty fire plugs and forty gas lamps protect against fire and illuminate the streets.

A LARGE FURNACE PLANT gives employment to thousands of hands, and makes a high grade of chilled car-wheel iron from ores, limestone and coal within ten minutes haul by rail, or an hour's haul by wagon. **FOUR LARGE LUMBER MILLS**, with an aggregate daily capacity of 200,000 feet of lumber, cut from the long-leaved yellow Pine of this country. **FOUR BRICK YARDS** are in active operation. A **SASH, DOOR and BLIND FACTORY**, a **FOUNDRY, MACHINE SHOP, FLOUR MILL, COTTON-SEED OIL MILL**, and various other industries are in successful operation, and the **TALLADEGA ICE CO.** cools the thrifty population with pure ice at 50 cents per hundred. Another large furnace plant will be completed within the next ten months. A Spoke and Handle Factory and many other industries are projected, with a view to early completion.

Taxable property has increased 100 per cent, within the past twelve months. The rate of taxation is limited in the city charter to half of one per cent., and the city offers an exemption from taxation to all manufacturing enterprises for a period of ten years. The county of Talladega supplies more crude material, in the way of minerals and timber, than any other county in the State. Almost within the corporate limits of the city are extensive deposits of the highest grades of limonite ores, yielding 50 to 58 per cent. metallic iron, with only a trace of phosphorus, and limestone abounds in the greatest abundance. Coal is within twenty miles by rail.

THE TALLADEGA LAND & IMPROVEMENT CO. owns 5,000 lots suitable for residences, business and manufacturing, in and adjacent to the city. Lots are donated to manufacturing enterprises, and liberal inducements offered to actual settlers. **SPRING LAKE PARK** is owned by this company, and it is being made the most attractive resort in the State. The lake covers an area of seven acres, and is a beautiful sheet of clear spring water. Parties seeking a healthy climate, free from malaria and epidemics, and a prosperous city, are invited to visit Talladega. Address for maps, etc.

The Talladega Land & Improvement Co.,  **Talladega, Ala.**

SHEFFIELD, Colbert County, Ala.

The Iron Manufacturing Center of the South.

BEING at the head of navigation, and on the south bank of the Tennessee river, Sheffield is the natural outlet for the mineral and manufacturing products of Alabama and neighboring States seeking a water route to points on the Ohio and Mississippi rivers, and to the Gulf of Mexico, as well as the best distributing point over Alabama, Eastern Mississippi and East Tennessee, South Carolina, Georgia and Florida for Northern and Western produce, groceries, provisions, machinery, &c. Four railroads certain, and several others assured. Principal shops of Memphis & Charleston Railroad will be erected here pursuant to written contract. These will employ between four hundred and five hundred mechanics, and consequently, with their families, will make an increase in population of at least two thousand people. Shops of three other railroads are contracted to be located here.

Five Blast Furnaces Now Under Construction,

Of which one is finished, and the remaining four contracted to completion the present summer, have estimated capacity of 700 tons pig iron per day. This is 40 per cent. more than now manufactured at Birmingham, Alabama. Experts do not hesitate to say that iron can be manufactured more cheaply at Sheffield than at Birmingham, and its river transportation facilities will enable Sheffield iron to reach the principal markets at a saving of from

\$2.00 TO \$2.50 PER TON.

A first-class daily newspaper is regularly issued. Furniture Factory, Bottling Works, Bakery, Dummy Street Railroad, a 90-inch Morse Cotton Compress, Electric Lights, Agricultural Implement Works, 3 Steam Brick Works, 2 Hand Brick Works, 2 Steam Wood-Working Establishments, Water Works, 2 Banks, a Savings Bank, and Steam Job Printing Office already in successful operation, and Iron Pipe Works, 15-ton Ice Machine and five-story hotel, with all modern appliances, will be erected. The Cleveland Hotel, Park House and numerous boarding houses furnish accommodations to travelers. Postoffice, Telegraph Office and Express Office already established. Paint Works and Stove Works now under construction. Other manufacturing establishments under consideration, and will probably be built shortly.

Good Water. Free Public Schools and Churches. Health and Climate Unsurpassed.

Drainage excellent. Splendid opening for men of push and energy. No "Old Fogy" element here.

No better point for profitable investment.

Sites for Manufacturing Enterprises,

And for Free Public Schools and Churches

Donated by Sheffield Land, Iron & Coal Company.

Population January 1st, 1887, 700; August 21st, 1887, by actual count, 2,588. Increase of population, 300 per cent. in eight months, and only limited by accommodations.

Three years ago the site of Sheffield was cultivated as corn and cotton plantations, and was without a railroad. Numerous two and three-story brick business houses, and one and two-story dwellings have been, and are being erected. The class of buildings will compare favorably with those in cities of 20,000 inhabitants.

LIMESTONE of excellent quality for fluxing iron in unlimited quantities at the furnaces' sites. First-class building stone and brick clay abundant. Rich and extensive deposits of brown hematite iron ore within twenty miles, along the lines of two Sheffield railroads. The Sheffield & Birmingham Railroad runs through the heart of the Warrior Coal Fields, which abound in first-class coking, steam, gas and grate coal. Timber is abundant and cheap.

The Memphis & Charleston Railroad and the Sheffield & Birmingham Railroad are now in operation into Sheffield. The Louisville & Nashville Railroad Co. is now extending its Nashville, Florence and Sheffield division, which will be completed to Sheffield before July 1st, 1888. Surveys of three other railroads have been recently completed to Sheffield, which will soon be the best combined river and railroad transportation center in the South.

Every merchant and every established manufacturing enterprise is doing a profitable business. More are needed. For further information address

WM. L. CHAMBERS, Vice-Prest. and Manager

Sheffield Land, Iron & Coal Co., - Sheffield, Ala.

Anniston

THE CENTER OF
Iron and Cotton Industry
AND MINERAL WEALTH.

"The Model City of the South."

IT IS

The Profits of Labor only that can add to the wealth and prosperity of a nation or community. It is this only that can make business successful and profitable, sustain and add to the value of real estate.

WHERE

Nature's resources are greatest, where nature's capital in rich agricultural lands, and where iron, coal and other useful minerals are most abundant, most accessible and of superior quality for all purposes, there will capital find its safest investment, largest returns and labor reap its richest reward. It is to the Anniston District where the best professional mining engineers and experts of the United States declare the great center of the iron industry of the South will drift, where its manufacture will be most permanent and profitable, and where ores in the greatest abundance and accessibility exist, and where they will be most easily mined, that this applies.



WOODSTOCK FURNACES—ANNISTON.

The Development of the Past Fifteen Years

Confirms all this, and every year convinces the experts of the correctness of their judgment. It is no longer opinion based on scientific and practical education; it is a fact that is clearly and successfully demonstrated, so that the visitor to the Anniston District can see at every step. The four iron furnaces that have been so long and successfully operated, and the new plant now being erected, and rapidly approaching completion, which will be capable of producing one hundred thousand tons of pig iron a year, demonstrate that

NOWHERE ELSE IN THE SOUTH

Has the iron industry been so profitable and so successful, or been established on so permanent a basis, and of no district is this so universally conceded by all, while nowhere else have arrangements been perfected and already established on so complete a scale to work the crude iron into higher branches of manufacture to increase its value, and to bring into the district the profits of skilled labor. THE GREAT CAR WHEEL WORKS OF NOBLE BROS. & CO., their rolling mill and steam forge and machine shops, and the Alabama Car Works, have been absorbed by the

UNITED STATES ROLLING STOCK COMPANY,

With a capital of \$4,000,000, for the purpose of adding to and enlarging the entire plant to build TWENTY CARS A DAY. Everything that goes into the creation of a car, except the tin for the roof and the wire nails, will be created from Anniston's crude material by her labor and skill. Fifty tons of wheel iron will be made into car wheels daily, twenty tons into car axles, fifty tons of pig iron into car and other castings, and fifty tons into bar iron and bolts, making nearly ten thousand dollars per day added to the wealth of the country by profitable labor converting nature's capital to the use of man. This company have a capital of \$4,000,000, and their Anniston works will represent a cash outlay of \$1,000,000. One thousand skilled mechanics will be employed as soon as the great enlargements under way can be completed.

THE STEEL BLOOMARY

Consumes and increases the value of twenty tons of pig iron per day, while the Pipe Foundry converts to the use of man TWO HUNDRED TONS OF PIG IRON PER DAY in one of the largest and best planned and most convenient labor-saving works on this continent. The Foundry of Murray & Steenson, Engine and Machine Works of Pinder & Co., and Boiler and Sheet Iron Works of J. & D. Noble, all add to the consumption of crude material by the creation of finished work.

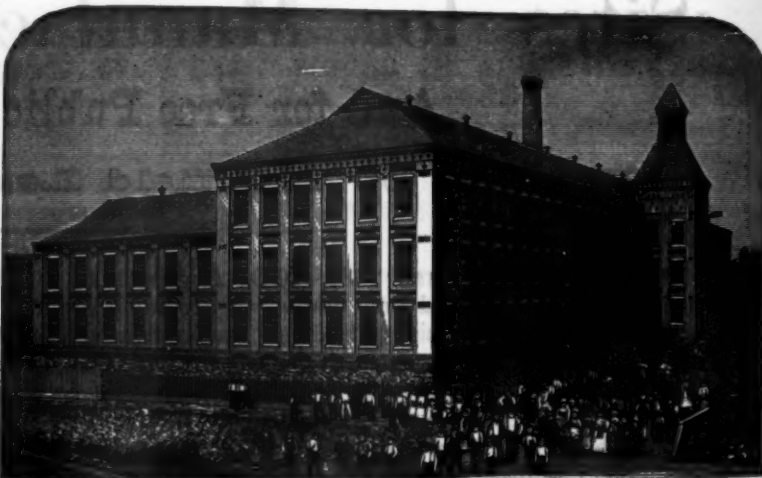
NOR IS IT TO IRON ALONE

That Anniston relies for increase of wealth and population. The Cotton Factory, with eleven thousand seven hundred spindles and three hundred and seventy-five looms, employing over three hundred and fifty operatives, adds greater value to the products of agriculture by converting six thousand bales of cotton into cotton cloth. The immense ninety-inch Morse Cotton Compress, with its brick warehouses, is fast making Anniston a cotton market and commercial center, and aiding its wholesale and retail merchants to extend and hold the trade of the country tributary to Anniston that its system of railroads has opened to them. The Georgia Pacific, the East Tennessee, Virginia & Georgia Railroad systems,

Give Direct Communication and Through Rates

To all parts of the country, while the Anniston & Atlantic Railroad, built by Anniston capital to open up new agricultural and mineral resources, gives Anniston, by connection with the Central of Georgia system, communication with the Atlantic sea coast and the new Anniston & Cincinnati Railroad, built and owned by Anniston citizens, opens up new resources and connections, and a shorter line with the great Northwest.

The proposed extension of the Anniston & Atlantic Railroad to Blocton will give another and shorter line to the great Cahaba Mines, producing the very best coal for domestic and manufacturing purposes in the South. Forty thousand acres of these coal lands, upon which a million and a half dollars have been lately spent in opening new mines and building several hundred coke ovens, ALL OWNED AND CONTROLLED BY ANNISTON CAPITAL, and developed to mine and manufacture three thousand tons of coal and coke per day, secures to Anniston for generations to come a full and certain supply of cheap fuel for all her industries, operated where a rich agricultural country can feed a manufacturing and commercial people, and where the



ALABAMA MANUFACTURING COMPANY'S COTTON MILL—ANNISTON.

Best, Healthiest and Most Invigorating Climate in the World,

With mountain air and pure water, and an elevation of nine hundred feet above tide water, insures the health and comfort of the workman and his family; where health and comfort stimulate and lighten labor, and secure to it and its industries the reward due to both. It is these advantages which have been given by nature that enabled Anniston's citizens to create her past and present prosperity, and which secure her future. It is that they may participate in and avail themselves of these advantages that Anniston invites NEW CAPITAL AND TALENT AND ENERGY from all sections. We invite all to come and see, and on the spot to judge for themselves of Anniston's great resources and possibilities. The comfort and quiet of the famous Anniston Inn will make a visit to our city a treat and pleasure. Any information, attention and courtesy will be given and shown by addressing or applying to the

ANNISTON CITY LAND CO., Anniston, Ala.

CONSTRUCTION DEPARTMENT

WE PUBLISH, every week, a list of every new factory, of whatever kind, projected anywhere in the South; every railroad undertaken, and every mining company organized. This information is always fresh, and, by enabling manufacturers to correspond with the projectors of such enterprises before their supplies of machinery have been purchased, is of great value. Manufacturers will find it to their interest to read this department carefully each week.

ALABAMA.

Alabama—Saw Mill.—Messrs. Oglesby, of Adairsville, Ga., will move their saw mill to some point in Alabama.

Anniston—Buildings.—J. L. Legrand contemplates erecting three brick store buildings, 20x60 feet each, on Noble street.

Anniston—Shed.—The East Tennessee, Virginia & Georgia Railroad Co. will erect a corrugated iron shed for temporary use.

Anniston—Broom Factory.—Messrs. Bosworth and McElwee, late of Illinois, have ordered machinery to start a broom factory.

Anniston—Rolling Mill.—The United States Rolling Stock Co., who are establishing large car works, as previously reported, have let the contract for another addition to their rolling mill to be erected at once. It will be 210x100 feet.

Anniston—Fire-brick Works.—C. Taylor & Sons contemplate doubling the capacity of their fire-brick works in the near future. They have purchased the clay lands at Weaver's Station referred to last week, and will mine clay for use at their works at Anniston. They will not manufacture brick at Weaver's Station.

Anniston—Pipe Works.—The Anniston Pipe Works, who are building extensive pipe works, as previously reported, will hold a meeting on October 1 to increase their capital stock from \$200,000 to \$500,000.

Camden—Shingle Mill.—Henderson & Co. will add shingle machinery to their saw mill.

Decatur—Houses.—The Decatur Land, Improvement & Furnace Co. will build more houses.

Decatur—Electric Light Plant.—The Decatur Electric Light & Power Co. will enlarge their plant.

Eufaula—Brick-yard.—It is rumored that R. Moulthrop will start a brick-yard.

Fairford—Railroad.—The Seaboard Manufacturing Co., of Mobile, will extend their logging railroad about 6 miles.

Florence—Cotton Factory.—The Alabama Land & Manufacturing Co. will put seven 40 inch cards, one drawing, one speeder, one 5-foot lubber and two railway heads in their cotton factory.

Florence—Bridge.—The Memphis & Charleston Railroad Co. (office, Memphis, Tenn.) are receiving bids for a new channel span and draw for their bridge across the Tennessee river.

Florence—Railroad.—W. B. Wood, J. C. Conner, W. E. Blair, J. H. Field and others have incorporated the Florence Northern Railroad Co., to build a railroad from Florence to the Tennessee State line, to connect with a road to be built through Wayne county, Tenn. The capital stock is \$500,000.

Florence—Hardware Factory.—The Florence Railway & Improvement Co. have it stated, closed a deal with New Jersey parties who will erect a large hardware factory to cost, it is said, \$300,000.

Huntsville—Building.—The contract for erecting the courthouse and postoffice building for the government, lately mentioned, will be awarded to Kelly Bros., of New Orleans, La., at \$69,000.

Huntsville—Dummy Railroad.—H. M. Fuller is president of the company who contemplate building the dummy railroad to the Shelta caverns, surveys for which were reported as being made by J. N. Trimble.

La Fayette—Flour Mill.—J. M. Frammell & Co. are remodeling their flour mill to the roller system. The capacity will be increased from 50 barrels daily to about 60 or 75 barrels daily.

Mobile—Cotton Compress.—E. M. Townsend is erecting a new and larger cotton compress at a cost of about \$40,000. An additional boiler has been put in.

Mobile—Sheds.—The Mobile & Ohio Railroad Co. are extending their sheds at their lower wharf, and will build a shed 50x 352 feet at their upper wharf.

Montgomery—Railroad.—The Alabama Midland Railroad Co. have placed the bonds for the building of their railroad, previously reported, and will commence work as soon as contracts can be let. It will extend from Montgomery to the Savannah, Florida & Western Railroad at Bainbridge.

Montgomery—Hotel.—The building of a large winter hotel is being considered, and a company will probably be formed. W. T. Chandler can give information.

Montgomery—Ice Factory.—The Capital City Ice Co. will increase the capacity of their ice factory from 15 to 20 tons per diem.

Mountain Mills—Cotton Mill.—W. H. Cherry & Co., reported last January as contemplating putting in their Mountain Mills additional machinery, expect to put in 3,000 spindles, with proportionate carding, lappers, &c., during the winter.

Ragland—Coal Mine.—A new coal mine is being opened by Mr. Hardy, of Broken Arrow.

Seddon—Hall.—A town hall is reported to be built.

Seddon—Saw and Grist Mill and Gin.—W. N. Roberson will erect a saw and grist mill and gin.

Seddon—Planing Mill, Dry-kiln, &c.—The Empire Lumber Co., of Chattanooga, Tenn., are erecting a saw mill with a daily capacity of 75 M feet, and will build a large dry kiln. They will build 5 miles of logging railroad. Electric light plant has been put in.

Selma—Railroad.—The Selma & Cahaba Valley Railroad Co. will issue \$3,000,000 of bonds to build their road, previously reported. Work will soon be commenced.

Selma—Depot.—Bids are being received for building the large union depot previously reported as to be erected by the East Tennessee, Virginia & Georgia and other railroad companies. It will be 300x65 feet. The cost is to be about \$25,000.

Spring Garden—Cotton Factory.—The Hurricane Creek Manufacturing Co. contemplate making improvements to their cotton factory, which will increase their capacity about 25 per cent.

Stroud—Warehouse.—J. H. Hines, of Hickory Flat, will probably build a warehouse.

Troy.—The Troy Building & Loan Association has been organized with a capital stock of \$75,000.

Union Springs—Bagging Factory.—The Farmers' Alliance will, it is stated, start a bagging factory.

Warrior Station—Cotton Factory.—R. H. Pearson, of Birmingham, offers to subscribe \$25,000 and secure \$15,000 more towards

building a \$50,000 cotton factory, if balance is raised at Warrior Station. The amount will be raised.

ARKANSAS.

Arkansas City—Electric Light Plant.—The Arkansas City Gas Co. will erect an electric light plant, and have contracted for machinery. The Thomson-Houston system will be used.

Batesville—Saw Mill.—John C. Bone is thinking of erecting a small saw mill.

Bear—Mining.—The Sand Rock Gold Mining Co., previously reported as organized with H. A. Dubaque, of Fall River, Mass., as secretary, are preparing to sink shafts, &c. They contemplate erecting a stamp mill and reduction works.

Black Rock—Hotel.—A large three-story brick hotel is being built.

Cabot—Gin.—Messrs. Neely have erected a gin.

Dallas—Telephone.—The Dallas & Waldron Telephone Co., capital stock \$1,000, has been chartered to build a telephone line from Dallas to Waldron. E. M. Jennings is president.

Elkins—Flour Mill.—J. R. Thomas, R. A. Rutherford, J. F. Hood and others have chartered the Elkins Mercantile & Roller Mill Co., capital stock \$10,000, to operate a flour mill, &c. Mr. Thomas is president.

Fort Smith—Railroad.—McCarthy & Kerrigan, of Little Rock, previously reported as receiving the contract to build the Fort Smith & Gardon Railroad from Fort Smith to Greenwood, have sublet the contract for the first ten miles to John Lee; the next five miles to Baker & Son, of Fort Scott, Kan.; two miles to C. E. Brown, of Dallas, Texas; the fifteenth mile to W. J. Brown, of Little Rock, and the last three miles to Arnold Bros., of Fort Smith.

Fort Smith—Ferry.—The Hays Ferry Co. has been incorporated with George Sengel as president. The capital stock is \$5,000.

Hackett City—Coal Mines.—The Kansas & Texas Coal Co. are preparing to open a new shaft at their coal mines and increase the capacity of their present shaft.

Hood—Flour Mill.—The Elkins Roller Mill Co. have built a roller flour mill.

Hope—Planing Mill.—The Hope Lumber Co. are preparing to rebuild their planing mill, reported last week as burned. The loss was \$40,000.

Little Rock—Baking Powder Factory.—E. Melsenaur is making extensive additions to his baking powder factory.

Little Rock—Church.—The contract to complete the Trinity Cathedral has been awarded to Pettefer & Bro. at \$12,000.

Little Rock—Land.—About 40,000 acres of land have been purchased by a St. Louis (Ill.) syndicate.

Little Rock—Timber Lands.—A. E. Wamamaker, of Omaha, Neb., is prospecting with a view to purchasing timber lands.

Lonoke—Hotel.—The Lonoke Hotel Co., capital stock \$5,000, has been chartered.

Pine Bluff—Electric Light Plant.—The electric light plant previously mentioned as to be erected by Mr. Thomas, of St. Louis, Mo., and others, who are completing the water works, will have a capacity for 70 arc and 2,500 incandescent lights.

Pine Bluff—Hotel.—Charles Owens will build an addition to his hotel.

Pocahontas—Flour Mill.—A roller flour mill has been erected.

Rogers.—The Rogers Building Association, capital stock \$25,000, has been chartered.

Russellville—Cotton Mill.—The Melrose Cotton Mills Co. are putting in another boiler to increase their power.

Texarkana—Canning Factory.—A canning factory is reported to be started soon.

FLORIDA.

Aucilla—Gin.—J. F. Devine has erected a new gin.

Melbourne—Street Railroad.—Alfred Wilcox, of Jamestown, N. Y., will build the street railroad previously mentioned. It will be about one mile long. He is now building a dock on Indian river 650 feet long.

Palatka—Railroad.—The St. John's, Lake Weir & Gulf Railroad Co., previously reported as to build a railroad from Palatka to Anclote, about 125 miles, are making the surveys for their road. Grading will probably soon be commenced.

GEORGIA.

Albany—Opera House.—A large opera house will probably be erected.

Amoskeig—Railroad.—The Amoskeig Lumber Co. will build a railroad.

Athens—Paper Mill.—The Athens Paper Manufacturing Co. contemplate increasing the capacity of their mill.

Athens—Building.—The Young Men's Christian Association will soon break ground for their building previously reported as to be erected. It will cost about \$13,500.

Athens—Implement Works.—There is talk of a stock company being formed by James M. Smith and others to establish extensive agricultural implement works in connection with the Athens Foundry & Machine Works.

Athens—Iron Foundry.—E. S. Lyndon will build the large iron foundry reported last week. He will invest about \$20,000. Work will be commenced soon.

Athens—Street Railroad.—The Athens Street Railway Co. contemplate extending their road.

Atlanta—Publishing.—The Christian Index Co. has been organized and will continue publishing the Index. J. S. Lawton is president and manager, and Charles M. Irwin, secretary.

Atlanta—Sewing Machine Factory.—J. M. Brosius, previously reported as to start a sewing machine factory, has, with W. E. Ragon and W. I. Zachry, incorporated the Brosius Sewing Machine Motor Co., capital stock \$500,000.

Atlanta—Barracks.—The contract to erect 5 buildings at the new barracks near Atlanta for the U. S. army, previously reported, has been awarded to Harris & Co. at \$93,663.

Atlanta—Railroad.—The Central Railroad & Banking Co. (office, Savannah) are laying new 70-pound steel rails on their Atlanta and Macon division.

Atlanta—Railroad.—The Chattanooga, Rome & Columbus Railroad Co., J. D. Williamson, president, in addition to making other extensions, will extend their road from Carrollton, Ala., to Atlanta. Work will probably be commenced within two months.

Blakely—Well.—The Central Railroad & Banking Co. (office, Savannah) will sink an artesian well.

Bluffton—Railroad.—J. J. Hayes, J. F. Cull, B. C. Lyon and J. N. Rogers have chartered a company to build a railroad from Bluffton to Blakely, 11 miles.

Bremen—Brick-yard.—A brick-yard has lately been started by A. D. Turner and G. W. Guthrey.

Brunswick—Church.—Work on the church previously mentioned as to be built by the Baptists will be commenced about October 1. The cost will be about \$25,000. E. Z. F. Golden can give information.

Brunswick—Land.—The Brunswick Land Reclamation Co., W. F. Fenniman, president, contemplate reclaiming 7,000 acres of land.

Cartersville—Chair Factory.—Mr. McLain, of Acworth, will erect a chair factory.

Cartersville—Planing Mill.—Mr. Wills, of Broken Arrow, Ala., will erect a planing mill at once.

Cartersville.—Soule Redd and H. H. Epping, of Columbus, and Lyman Dana, of St. Louis, Mo., are organizing a company with a cash capital of \$75,000 to establish some enterprise.

Cartersville—Railroad.—C. H. Smith, H. M. Smith and G. H. Aubrey have chartered the Fairmount Valley Railroad Co. to build a railroad from Cartersville to Coosawatee, with privilege of extending it to the Tennessee State line.

Cave Spring.—The board of trustees of the Cherokee Wesleyan Institute will erect an additional building 60x30 feet.

Cedartown—Planing Mill, &c.—C. Philpot will erect a planing mill and a sash, door and blind factory at once.

Cedartown—Hotel.—\$10,000 have been raised towards building the hotel previously reported.

Cedartown—Street Railroad.—Thomas H. Booz, lately reported as to build a street railroad, has let the contract for its construction to Mr. Dupoyser.

Cedartown—Iron Mining, &c.—The Polk County Mining Co. has been reorganized with A. L. Wilcox, of St. Louis, Mo., as president; W. L. Hickman, St. Louis vice-president and general manager, and A. P. King, St. Louis, secretary and treasurer, and the capital stock has been increased to \$25,000. They will erect an additional ore washer and considerably enlarge their mining operations.

Cement—Cement Works.—G. H. Waring has erected hoisting machinery at his mine, and will increase the capacity of his cement works.

Cohutta—Mining.—W. R. Morrison, of Citico, Tenn., has opened an iron ore mine.

Columbus—Glass Factory.—A party in Tennessee is contemplating erecting a glass factory to employ about 50 hands. John Blackmar can give information.

Columbus—Flume.—The Eagle & Phoenix Manufacturing Co. are preparing to build a new (stone) flume at their No. 3 mill. It will cost several thousand dollars.

Conyers—Electric Light Plant.—The Stewart Paper Manufacturing Co. will erect electric light machinery at their paper mill. They may contract to light Conyers.

Cordele—Planing Mill.—Peterson & Perry have lately purchased machinery for a planing mill.

Dalton—Sash, Door and Blind Factory.—W. B. Farrar contemplates starting a sash, door and blind factory.

Dempsey—Saw Mill.—J. S. Betts & Co. have sold their saw mill, and will shortly purchase machinery to start a new mill.

Elberton—School.—The town has decided to issue \$5,000 of bonds to erect a school building.

Fayetteville—Saw Mill.—A saw mill will be erected by Orrick & Dooley.

Graysville—Ice Factory and Broom Factory.—The Graysville Mining & Manufacturing Co. will start an ice factory and a broom factory. Want to purchase broom machinery.

Harmony Grove—School.—Proposals for erecting the school building previously reported will be received until September 20 by R. L. Hardman.

Hawkinsville—Warehouse.—The Farmers' Alliance have purchased a site and will build a cotton warehouse at once.

Jackson—Railroad.—The Jackson & Indian Springs Railroad Co. have appointed a committee, T. J. Dempsey and others, to locate their road and secure the right of way.

Kennesaw—Barrel Factory.—C. J. Hardage & Co. contemplate, it is said, starting the manufacture of slack barrels.

Lexington—Railroad.—The Lexington Terminal Railroad Co. has been formed, with Hamilton McWhorter as president, to build the dummy railroad from Lexington to the Georgia Railroad at Crawford, reported last week. It will be three miles long and will cost about \$12,000 or \$13,000. Hampden & Braden have the contract for the grading and have commenced work.

Lime Branch—Railroad.—It is stated that parties are preparing to build a short railroad to connect with the Chattanooga, Rome & Columbus Railroad.

Louisville—Mill.—A mill is being built by A. N. Beach.

Lovejoy's Station—Guano Factory.—A \$16,000 stock company has been formed to erect a guano factory.

Macon—Residence.—Mr. Woodruff, architect, has contracted to build an \$8,000 residence.

Macon—Bridge.—The contract to build a four-span bridge across the Ocmulgee river has been let by the Central Railroad & Banking Co. (office, Savannah) to the Atlanta Bridge & Axle Co., of Atlanta.

Marietta—Water Works.—The Marietta & North Georgia Real Estate & Improvement Co. are thinking of building water works as soon as a sufficient patronage is assured.

Marietta—Ice Factory.—Parties contemplate erecting an ice factory.

Milledgeville—Fertilizer Factory.—J. D. Hough and W. S. Brooks contemplate starting a fertilizer factory, but have not fully decided.

Newnan—Buggy Factory.—James A. Parks, W. G. Arnold and John S. Ware have incorporated the Newnan Buggy Co., capital stock \$25,000, to manufacture buggies, wagons, &c.

Newnan—Hotel.—George Jones is corresponding with a party who contemplates building a 50-room hotel at a cost of about \$25,000. A stock company will probably be formed.

Newnan—Depot.—The Atlanta & West Point Railroad Co. (office, Atlanta) are preparing to build a new passenger depot.

O'Brien—Shingle Mill.—Everett & Boyle, lately mentioned as to increase the capacity of their shingle mill, will fully double their capacity for manufacturing sawed and hand-made shingles.

Oglethorpe County—Iron Mine.—Birmingham (Ala.) parties have purchased an iron ore mine on the land of John Moore and will develop it at once. Surveys for a branch road from the Georgia Railroad to the mine are being made.

Pine Bloom—Saw Mill.—B. B. Gray will add molding machinery to his saw mill.

Reynolds—Cotton Mill.—J. F. Hanson, of Macon, has purchased one-half interest in the Elmira Cotton Mills of E. B. Waters. They will erect a new building and put in about \$50,000 of additional machinery.

Rome—Rolling Mill.—The Rome Land Co. want to purchase machinery for a rolling mill.

Rome.—The Rome Contracting & Building Co., capital stock \$100,000, has been chartered.

Rome—Street Railroad.—The North & South Street Railway Co., previously reported as to be chartered by J. C. Printup and others, has a capital stock of \$10,000. They are now building their road. It will be 2½ miles long.

Savannah—Guano Works.—The Savannah Guano Co. are building additional works for handling acid phosphates and for manufacturing ammoniated fertilizers, &c. The cost will be about \$50,000 or \$60,000.

Tennille—Publishing.—Hilton & Overstreet will start a printing establishment and publish a paper.

Ty Ty—Gins.—W. E. Williams and J. L. Ford have each erected gins.

Wadley—Wells.—Speir & Bedinfield have sunk an artesian well and are preparing to sink two others.

Woodbury—Broom Factory, &c.—The Oak Mountain Variety Works, previously reported as to start the manufacture of brooms, chairs, &c., want to purchase broom machinery. They solicit correspondence in regard to chair bottom stuff, cane, &c.

Woodbury—Gin and Guano Factory.—J. M. & F. J. Williams are thinking of starting the gin and guano factory reported last week within 6 or 8 months.

KENTUCKY.

Beech Grove—Railroad.—The Owensboro, West Louisville & Sebree City Railroad Co. will hold a meeting on September 15 to organize and arrange for the building of their road.

Covington—Telephone.—The Columbia Telephone Co., capital stock \$10,000, has been chartered by J. P. Dieter, C. H. McNeil and John S. Fresham.

Georgetown—Railroad.—There is talk of a railroad being built from Georgetown to Maysville.

Henderson—Flour and Corn Mill.—The Henderson Milling Co., lately reported as to rebuild their burned mill, have contracted for machinery. The daily capacity will be 125 barrels of flour and 100 barrels corn meal.

Hopkinsville—Tobacco Factory.—Efforts are being made to form a stock company to erect a tobacco factory to cost \$10,000. R. W. Ware and T. C. Hanbury are interested.

Lebanon—Water Works.—New proposals for building the water works previously mentioned are being advertised for and will be received until September 19 by A. Offutt. Bids will also be received for pumping machinery (both horizontal and vertical) of 1,000,000 gallons capacity. The reservoir is to have a capacity of 1,350,000 gallons. J. D. Cook, of Toledo, O., is engineer and will give full particulars.

Lexington—Warehouse.—A three-story brick warehouse, 60x180 feet, will be erected by R. D. Wilson & Co. at a cost of about \$14,000.

Lexington—Residence.—Walter Scott will build a residence to cost \$8,500.

Louisville—Pipe Line.—The Kentucky Rock Gas Co., previously reported as to pipe gas from wells near Brandenburg to Louisville, will issue \$500,000 of bonds to build their pipe line. They contemplate soon commencing work.

Louisville—Gas Works.—The Louisville Gas Co. will build a large reservoir and have let the contract to W. F. Shanks.

Mayfield—Railroad.—An additional subscription of \$20,000 has been voted to the C. & F. Railroad.

Nolen—Flour Mill.—T. Watkins & Co. have lately remodeled their flour mill to the roller system. The capacity is 75 barrels per diem.

Owensboro—Ice Factory.—Parties will erect an ice factory to cost \$50,000 and have contracted for machinery.

Owensboro—Building.—A new building is reported to be erected for the St. Frances Academy.

Owensboro—Wheel Factory.—The Owensboro Wheel Co. contemplate putting machinery in their factory for manufacturing larger sized wheels.

Paducah—Iron Furnace.—Efforts are being made to raise a subscription of \$5,000 to secure the erection of the iron furnace by W. M. Janes and others, previously reported.

Paducah—Hub Factory.—L. W. Emery, lately mentioned as putting in operation the Paducah Hub Works, which have been idle for several years, is overhauling the machinery and will purchase some new machinery.

Paisley—Corn Mill.—McKetchum & Son have built a new corn mill.

Pittsburg—Pumping Machinery.—The Peacock Coal Co. will erect pumping machinery.

Providence—Corn Mill.—Rice, Tapp & Givens contemplate adding a corn meal mill to their flour mill and want to purchase machinery.

Rapids—Distillery.—A small whiskey distillery has been started in Sumner county, Tenn., by Bradley & Johns.

Russellville—Opera House.—An opera house is to be built at a cost of \$10,000.

Trenton—Hotel.—C. D. Runyon, J. D. Rutherford and others have chartered the Trenton Hotel & Store Co.; capital stock \$12,000.

Victoria—Railroad.—Work is reported to be soon commenced on a railroad to be built from Victoria to Fordsville to open up coal lands. A. A. Bullitt can give information.

Williamstown—Flour Mill.—D. L. Cunningham contemplates erecting a 30-barrel roller flour mill.

Williamstown—Lumber Mill.—R. H. Elliston & Co. will add some machinery to their lumber mill.

LOUISIANA.

Arcadia—Saw and Planing Mill.—Conger & Brown will at once rebuild their saw and planing mill, lately mentioned as burned.

Baton Rouge—Timber Lands.—Charles Easton, of London, Eng., has applied to purchase 1,400 acres of timber lands.

Berwick—Saw Mill.—Brownell & Moore will shortly start up their saw mill reported, last week as wrecked by a storm.

Burnside—Sugar Mill, &c.—J. W. Tucker, reported last week as repairing his sugar house, is putting in a supplemental mill also. The cost of improvements will be \$20,000.

Houma—The Canal Belanger Land & Live Stock Co. capital stock \$1,000, has been organized with Ernest Gindry as president.

Lake Providence—Cotton Compress.—It is reported that a cotton compress will be erected. If true, the East Carroll Improvement & Immigration Association can give particulars.

Lake Providence—Oil Mill.—A cottonseed oil mill is reported to be built. The East Carroll Improvement & Immigration Association can probably give particulars.

Lake Providence—Railroad.—The East Carroll Improvement & Immigration Association can give particulars in regard to the railroad previously mentioned as projected to the Macon Hills, about 50 miles. It is to be a narrow gauge road.

Lydia—Sugar Factory, &c.—P. E. Sandager, of Grafton, Dak., and others, lately mentioned as purchasing land to build a sugar factory, saw mill, etc. state that they will not do so just at present.

Monroe—Cotton Factory.—Parties are reported as securing estimates as to the cost of machinery for a 1,200 spindle cotton mill. If true, Stone & Layton can give particulars.

New Orleans—Contracting.—Woodward, Wright & Co. have incorporated to build railroads, warehouses, etc. Their capital stock is stated as \$112,000.

New Orleans—Cotton Mills.—The Lane Cotton Mills are reported to be enlarged soon.

New Orleans—Knitting Works.—The Southern Knitting Works have started the manufacture of bagging.

New Orleans—Laundry.—F. M. Vincent, C. Conway and L. A. Carter have started a steam laundry on Julia street.

New Orleans—Machine Works.—It is reported that the Reynolds Iron Works have lately been enlarged.

New Orleans—Machine Works.—The New Orleans Machinery Co., capital stock \$10,000, has been organized to manufacture machinery, with William L. Cushing as president, and George F. Wharton, secretary.

New Orleans—Railroad.—Subscriptions are being raised towards building the railroad from Algiers to a point 50 miles south of New Orleans, previously reported. M. J. Zantz is interested.

New Orleans—The Municipal Improvement Co., Limited, capital stock \$50,000, has been organized with Francis A. Gorton as president, and Martin A. Alley, vice-president.

Shreveport—Electric Light Plant.—C. A. Leffingwell will rebuild his electric light plant, reported last week as burned. The loss was \$16,000.

MARYLAND.

Baltimore—Bottling Works.—The Stronitz Mineral Spring Co. have established bottling works at Fayette and Liberty streets.

Baltimore—Cedar Works.—Emil Rautmann, Herman Koehler, William N. Varina, Condon E. Varina and Lindley M. Huggins have chartered the Baltimore Cedar Works, capital stock \$100,000, to manufacture woodenware from cedar.

Baltimore—Clothing Factory.—H. Wurtzburger & Son have increased their facilities for manufacturing clothing.

Baltimore—Electrical Works.—Robert Kennert, John S. Crowthers, Edward L. Tunia, Benjamin Blum and Joseph B. De Lery have incorporated the Wenstrom Southern Electric Manufacturing Co., to manufacture electric appliances, furnish electricity for light and power purposes, &c. The capital stock is \$100,000. They have rented the machine works formerly operated by the H. A. Ramsay Manufacturing Co.

Baltimore—Publishing.—The Maryland Law Journal Co., capital stock \$20,000, has been chartered to publish a daily paper, with H. M. Benzinger, Edgar G. Kenly and others as directors.

Baltimore—Straw Hat Factory.—M. S. Levy & Sons, whose straw hat factory is reported in this issue as burned, will rebuild if they can secure a suitable location. Their loss on machinery is \$10,000.

Baltimore—Brake Factory.—The Boyden Power Brake Co., lately mentioned as to erect works for manufacturing brake equipments for cars and locomotives, will soon purchase a site for their contemplated works.

Baltimore—Buildings.—F. W. Maldeis will erect 8 two-story buildings on Choptank street.

Baltimore—Buildings.—John King will rebuild his five large brick buildings on Sharp street, burned in the fire mentioned in this issue. The loss is \$160,000.

Bittinger—Cheese Factory.—J. C. Beachy has lately started a cheese factory.

Deer Creek—Flintstone Quarry.—Horace Stokes, of Stafford, has leased and will develop a flintstone quarry. He wants to purchase a six horse-power hoisting engine and boiler.

Frederick—Cigar Factory.—C. F. Kinsmaul is enlarging his cigar factory.

Frederick—The Mutual Savings & Building Association is being organized by George H. Zimmerman.

Hagerstown—Lumber Mill.—The Hagerstown Manufacturing Co. contemplate reorganizing and building a new lumber mill.

Hagerstown—Spoke Factory, &c.—The Hagerstown Spoke & Bending Co., previously reported as to probably rebuild their burned factory, have purchased a site and will erect a three-story brick building, 150x45 feet, with engine and boiler and dry-houses in rear. Their capacity will be about double that of the old factory.

Hughesville—Canning Factory.—The Warfield Manufacturing Co., of Baltimore, have started a canning factory.

Leonardtown—Canning Factory.—A canning factory is reported to be started.

Anacostia, D. C.—Hall.—D. E. Haines contemplates erecting a brick hall, three stories, 40x60 feet.

Washington, D. C.—Electric Light Plant.—Architect Edward Clark, of the Capitol, recommends that 3 new boilers of 100 horsepower each be purchased for the electric light plant at the Capitol.

Washington, D. C.—School.—The contract to erect the school building at Fourteenth and O streets, previously reported, has been awarded to Bright, Humphrey & Co. at \$22,368.

Washington, D. C.—Underground Cable.—The Chesapeake & Potomac Telephone Co. propose to lay 27,000 feet of underground cable.

Washington, D. C.—Electrical Railroad.—The Georgetown & Tenallytown Railroad Co. have asked for permit to run their cars by electricity.

Washington, D. C.—Bridge.—The Groton Iron Tanks Co. have contracted to build the Woodley Lane bridge, previously reported, and have commenced work. It will cost about \$40,000.

Washington, D. C.—Buildings.—G. C. Cullum will erect 2 buildings on North Carolina avenue to cost \$5,500; Pitney & Bradford, 3 store buildings on Ninth street to cost \$15,000; George Green, a \$6,500 dwelling on Dumbarton avenue; J. G. Hester, a \$5,000 dwelling at 27 B street; A. P. Hines, a \$6,000 dwelling at 2113 E street; H. E. Blan, a building at Fourteenth and G streets to cost \$10,000; A. R. Perle, an \$8,000 dwelling at 1,433 L street, and Thos. W. Riley, 3 brick dwellings.

MISSISSIPPI.

Aberdeen—Electric Light Plant.—The city council contemplate erecting an arc and incandescent electric light plant, and want to purchase machinery. Paine & Dalton have been appointed a committee and solicit correspondence with manufacturers.

Aberdeen—Tannery.—The Aberdeen Tanning Co. will put in a new bark mill and centrifugal pump.

Columbus—Railroad.—The Memphis & Atlantic Railroad Co., previously reported, has been organized with F. M. Abbott as president, and Bell Price, secretary and treasurer. They will soon commence work on their road. It will extend from Memphis via Columbus to Pensacola, Fla.

Columbus—Railroad.—The Columbus, Fulton & Eastport Railroad Co. will issue \$50,000 of bonds to secure the right of way and make surveys for their railroad, which is projected to extend from Columbus to Eastport.

Columbus—Bridge.—The Kansas City Memphis & Birmingham Railroad Co. (office, Birmingham, Ala.) will erect an iron bridge over the Buttahachie river on their Columbus branch.

Durant—Cotton Compress, &c.—The name of the company lately reported as formed to erect a cotton compress and warehouse is the Durant Compress & Improvement Co. Work has been commenced. William S. Childs and M. L. Weems are interested.

Durant—Wagon Factory.—It is reported that the wagon factory of A. J. Love will be enlarged.

Grenada—Warehouse.—The Grenada County Farmers' Alliance will build a brick warehouse for storing cotton.

Glendale—Railroad.—The Helena, Tupelo & Decatur Railroad Co., previously reported as organized to build a railroad from Glendale, opposite Helena, Ark., to Decatur, Ala., have commenced making surveys.

Hickory Flat—Planing Mill.—A planing mill is being built by Crawford & Cox.

Hickory Flat—Saw Mill.—Daniel & Smith will build a saw mill near Hickory Flat.

Holly Springs—Fire-brick Works.—The Holly Springs Fire-brick & Earthenware Co., lately reported as organized, will have a capital of \$45,000. They will add the fire-brick works to their pottery works. Will want machinery.

Holly Springs—Bath-houses.—William A. Hill will erect steam machinery at his Eagle Springs Hotel for hot, cold and electrical baths.

Meridian—Bagging Factory.—The Farmers' Alliance are negotiating for the East Mississippi Cotton Mills with a view to starting the manufacture of bagging.

Meridian—Saddle and Harness Factory.—Starr Johnson will start a saddle and harness factory.

Meridian—Dummy Railroads.—J. L. Lloyd and others, lately reported as purchasing the Planters' Cotton Compress, have purchased the entire estate of F. A. Ragdale for about \$260,000, and will soon build two or more lines of dummy railroad. They will make efforts to have manufactories established.

Meridian—Hotel.—A 100-room hotel is reported to be built soon.

Oxford—Railroad.—The Memphis, Oxford & Columbus Railroad has been voted a subscription of \$20,000.

Poplar Creek—Saw Mill.—S. N. Cortledge & Sons have purchased machinery to erect a 16 horse-power saw mill.

Potts Camp—Saw Mill.—Morrison & Co. are building a saw mill near Potts Camp with a daily capacity of 20 M feet.

Vicksburg—Residence.—Mrs. Bazzinsky will build a residence to cost \$6,500.

West Point—Saw Mill.—Maxson & Snyder have purchased machinery to start a saw mill.

NORTH CAROLINA.

Asheville—Factory.—The Wilson Preservative Co. have started a factory.

Charlotte—Cotton Compress.—The Richmond & Danville Railroad Co. and the Carolina Central Railroad Co. will erect a Morse cotton compress at a cost of \$60,000. They have commenced work on brick buildings.

Charlotte—Publishing.—A \$30,000 stock company has been formed to continue the publication of the Chronicle. H. C. Jones, F. B. McDowell and J. L. Chambers are directors.

China Grove—Gold Mine.—J. S. Warner, of Charlotte, is opening a gold mine.

Danbury—Iron Mines, Iron Furnaces, &c.—Thomas Ewing & Co., of New York city, have purchased the iron ore lands lately mentioned and are negotiating for the purchase of other iron ore mines. They contemplate developing at once, it is said, and building furnaces, laying out a manufacturing town, &c.

Durham—Gas Works.—J. S. Carr, of Durham, and H. Leftwic, of Greensboro, lately mentioned as purchasing the plant of the Durham Electric Light Co. and to add gas works, have, with others, organized the Durham Gas Co., with a capital stock of \$60,000. They will build works at once. Mr. Carr is president, and George W. Watts, vice-president.

Durham—Snuff and Tobacco Factory.—The R. F. Morris & Son Manufacturing Co., manufacturers snuff and smoking tobacco, will erect a new brick factory three stories high.

Durham—Rubber Stamp Factory.—S. F. Stephens has started the manufacture of rubber stamps, &c.

Fayetteville—Ice Factory.—The Fayetteville Ice Co., lately mentioned as to enlarge their ice factory, have not yet fully decided to do so.

Greensboro—Marble-yard.—A marble-yard has been started by Jordan & Stillier.

Greensboro—Gas Works and Electric Light Plant.—The Greensboro Gas & Electric Light Co., reported last week as to succeed the Greensboro Gas Co. and to enlarge their gas works and add an electric light plant, have a capital stock of \$75,000.

Haywood County—Tunnel.—The contract to build a tunnel 1,390 feet long through Fla-

gah mountain for the Carolina, Knoxville & Western Railroad, previously mentioned, has been awarded to Z. T. Copeland, of Birmingham, Ala. He will soon commence work.

Ivy—Iron Mine.—The Hook iron ore mine is reported to be developed.

Morganton—Railroad.—The Southern & Western Air Line Railroad Co. are preparing to commence work on their road, previously reported. S. McD. Tate is president.

Mount Airy—Hotel.—Rufus Roberts will build a brick hotel. Work has commenced.

New Berne—Railroad.—The Atlantic & North Carolina Railroad Co. will soon begin laying new steel rails on their road from New Berne to Morehead City, previously reported.

Newton—Courthouse.—The contract for making about \$10,000 of improvements to the Catawba county courthouse has been let.

Oxford—Tobacco Factory.—B. C. Cosart will build 2 three-story leaf tobacco factories and has commenced work.

Raleigh—Depot.—It is rumored that the Raleigh & Augusta Air Line Railroad Co. will build a new passenger depot.

Raleigh—Opera House.—Plans are being prepared for an opera house. The secretary Chamber of Industry can give information.

Raleigh—Railroad.—The Chamber of Industry are considering the building of a railroad south from Raleigh into Harnett county.

Raleigh—Ice Factory.—The Raleigh Ice Co. are refitting their factory with new machinery at a cost of \$15,000. The capacity will be 25 tons per diem.

Randolph County—Gold Mine.—The Grassy creek gold mine is being worked and will be fully developed.

Red Springs—Railroad.—W. A. Williams & Bro., reported last week as building a logging railroad 10 miles long, may extend it to a point on the Raleigh & Augusta Air Line Railroad.

Sanford—Sash, Door and Blind Factory.—J. B. Makepeace will put additional machinery in his sash, door and blind factory.

Seaboard—Saw Mill.—Joseph E. Cuthwell and Joseph W. Jordan contemplate erecting a saw mill at or near Seaboard.

Union County—Gold Mining.—The Phyfer mine has been purchased by New York parties at about \$10,000. They will continue the development.

Warsaw—Crate Factory and Gin.—Thos. B. Pierce will increase the capacity of his crate and basket factory and erect a cotton gin.

Weldon.—J. A. Harrell has secured an option on the Shocco Springs property in Warren county and will organize a stock company to purchase it and make improvements.

Wilmington—Depot.—The Carolina Central Railroad Co. will make extensive improvements to their passenger depot and enlarge their sheds 400 feet in length and 35 feet in width.

Wilmington—Chemical Works.—The Dalton Chemical Co., reported last week as formed to manufacture chemicals, will erect works. Will need machinery.

Winston—Foundry and Machine Shop.—It is reported that J. A. Vance is erecting a foundry and machine shop.

SOUTH CAROLINA.

Anderson—Cotton Mill.—The Anderson Cotton Mills, previously reported as chartered by J. A. Brock and others, have purchased a site of 54 acres and will manufacture brick during the fall preparatory to beginning building next spring. Their capital stock is \$100,000.

Anderson—Hotel.—The plans for the \$40,000 hotel previously mentioned as to be built by the Anderson Hotel Co. have been prepared. It will be of brick, four stories,

115x109 feet. Hydraulic elevators, electric lights, &c., will be put in.

Bennettsville—Cotton Compress.—A cotton compress is reported to be erected.

Charleston—Building.—Proposals for repairing the Charleston Almshouse will be received until September 8 by Dennis O'Neill.

Charleston—Residence.—A two-story residence, 62x85 feet, will be built on Broad street by Bishop Northup at a cost of \$20,000.

Charleston—Dye Works.—The Charleston Steam Dye Works have added some machinery to their works.

Columbia—Batting Factory.—Miller Bros. have formed the Miller Cotton Batting Co. and will start a cotton batting factory at once. They have purchased machinery. About \$10,000 will be invested. The capacity will be 1,500 pounds daily.

Florence—Electric Light Plant.—A company will probably be formed to erect an electric light plant and a committee has been appointed to ascertain the cost of a plant, &c. W. H. Day can give information.

Georgetown—Tram Road.—There is talk of building a tram road from a point opposite Georgetown to Pawley's Island. C. A. Ball can give information if anything is done.

Lexington—Cotton Mill.—The Red Bank Mills have lately added 100 looms.

Montmorenci—Saw Mill.—E. B. Curtis will at once rebuild his saw mill, reported in this issue as burned.

Newberry—Cotton Mill.—The Newberry Cotton Mills have lately added some new machinery.

Spartanburg—Hosiery Mill.—A Massachusetts party has about concluded to move his hosiery mill to Spartanburg. He will have about \$20,000 invested and will employ about 75 hands. The secretary Board of Trade can give information.

Spartanburg—Foundry and Machine Shop.—It is rumored that a large foundry and machine shop will shortly be established.

Wilson's—Saw and Planing Mill, &c.—Thomas Wilson has erected a saw mill with a capacity of 30 M feet per diem and will add a planer and a dry-kiln.

TENNESSEE.

Bradford—Distillery.—A small whiskey distillery has been started by Benjamin G. Patrick.

Bristol—Buildings.—Z. L. Burson will erect 3 two story brick store buildings.

Carthage—Railroad.—The Nashville & Knoxville Railroad Co. will extend their road from Gordonsville to Carthage, previously reported, as soon as the subscription voted by Smith county is paid.

Chattanooga—Mining, &c.—The Chattanooga Mining & Railway Co. has been incorporated to engage in mining and manufacturing, &c., by S. S. Eaton, J. J. Lupton, J. P. Haskins, William H. Hardin and Charles A. Lyster.

Chattanooga—The district school commissioners will erect an eight-room school building at St. Elmo.

Chattanooga—Brick Works.—J. W. Wells has added to his brick works the manufacture of pressed brick.

Columbia—Electric Light.—The Columbia Electric Light & Power Co. has been chartered.

Cookeville—Hotel.—E. D. Staley will build a brick hotel.

Coopertown—Distillery.—James H. Holmes has started a distillery for manufacturing whiskey on a small scale.

Cumberland Gap—Railroad.—The Big Creek Coal & Iron Co. are making surveys for a railroad from Cumberland Gap to Big Stone Gap, Va.

Estill Springs—Handle Factory.—W. R. Elder will start a handle factory.

Fayetteville—Electric Light Plant.—A. C. Green expects to soon add to his electric light plant machinery for incandescent lighting.

Greeneville—Electric Light Plant.—There are prospects of an electric light plant being erected.

Hansford—Saw Mill.—John H. Farmer is erecting a new saw mill about 2 miles from Hansford.

Helenwood—Coal Mining.—The Breckenridge Cannel Coal Co. has been chartered to mine coal.

Jackson—Planing Mill.—J. F. Cain & Son, of Bradford, write us that they will not build a planing mill, as lately reported.

Jackson—Cigar Factory.—Vauden Bros. will erect a cigar factory. About 30 hands will be employed.

Knoxville—Buildings.—Alexander White will erect a block of three-story brick buildings.

Knoxville—Cold Storage.—The Armour Packing Co., of Kansas City, Mo., will build a 2½ story warehouse for cold storage, and have let the contract to R. Jones & Co.

Knoxville—Buildings.—E. T. Camp, S. T. Powers, J. B. Luttrell and W. H. Roberts have chartered the Eldridge Improvement Co. They will, it is stated, erect buildings.

Knoxville—Hotel.—Jones & Russell have the contract to erect the brick hotel for M. E. & S. O. Thompson, previously reported, and have commenced work. The hotel will be four stories, 50x130 feet.

Knoxville—Building.—McLemore & Kelly have been awarded the contract to erect the new building for the St. John's Orphanage. It will cost \$8,500.

Knoxville—Gas Works.—The Knoxville Gas Co., lately reported as to improve their works, will put in about \$30,000 of new machinery at once.

Memphis—Shirt Factory and Laundry.—Henry Loeb, lately reported as to start a steam laundry, will erect a building to be used as a shirt factory and steam laundry. Plans have been prepared and work will soon be commenced.

Memphis—Implement Works.—W. E. Ellison & Son may soon increase the capacity of their implement works.

Mouse Creek—Tannery.—S. P. Clair has put a new engine in his tannery.

Mouse Creek—Lime-kiln.—P. H. Schultz has erected a lime-kiln 2½ miles from Mouse Creek.

Murfreesboro—Evaporating Factory.—J. D. Lyon and A. G. Tompkins have started an evaporating factory.

Nashville—Boiler and Engine Houses.—The board of public works and affairs will receive bids for erecting a boiler-house and an engine-house at the new water works station.

Nashville—Planing Mill.—The Junk Bros. Lumber Manufacturing Co. have commenced building a planing mill adjoining their saw mill. It will be 65x150 feet, and will be equipped with the latest improved machinery.

Nashville—Distillery.—Macon & Co. have started a small whiskey distillery.

Nashville—Water Works.—The city council are considering a bill to appropriate \$73,996 to purchase pipe to make connection with the new water works.

Nashville—Machine Shops and Depot.—The Nashville, Chattanooga & St. Louis Railroad Co., reported last week as to build large new machine shops, will remove their present shops from Nashville to near West Side park, and will erect them on a larger scale. Grading will be commenced soon.

The total cost of shops will be about \$250,000. A 40-stall roundhouse will be built also. It is stated that after the shops are moved this company and the Louisville & Nashville Railroad Co. will build the large union depot previously reported.

Pikeville—Railroad.—The Nashville, Chattanooga & St. Louis Railroad Co. (office, Nashville) will extend their Jasper Branch road to Pikeville.

Pondville—Distillery.—Buren & Fleming have started a small whiskey distillery.

Rhea Springs—Hotel.—S. J. A. Frazier, John E. Pyott and J. C. Abernathy & Sons will build a large hotel and several cottages.

Sewanee—Chapel.—A chapel to cost \$60,000 is reported to be erected at the Sewanee University.

Somerville—Railroad.—A railroad is contemplated to be built soon from Somerville to Lawrenceburg, about 90 miles.

Somerville—Cotton Compress, Mill and Gin.—A company has been formed to erect the cotton compress and warehouse previously mentioned; also a steam mill and cotton gin. Machinery has been purchased. \$25,000 of capital stock has been subscribed.

Springfield—Distillery.—A. C. Baggatt has started a small whiskey distillery.

Tullahoma—Barrel Factory.—The barrel factory of H. M. Yost has, it is stated, been enlarged.

Tullahoma—Distillery.—Davis & Schwaab are adding machinery to their whiskey distillery to increase capacity.

Union City—Wheel Factory.—Beck & Gardner contemplate erecting at their spoke factory a wheel factory with a daily capacity of 75 sets.

Union City—Press Factory.—Sanders & Gardner will erect a factory for manufacturing hay presses, &c.

Wallview.—The Pine Mountain Coal, Iron, Land, Railroad & Manufacturing Co. are thinking of consolidating with another company. If carried out several new enterprises will be established.

TEXAS.

Austin—Furniture, &c.—Proposals for furnishing furniture and carpets and matting for the new Capitol building will shortly be advertised for by the Capitol Furnishing Board, W. A. Rhea, president.

\$100,000 have been appropriated for the purpose.

Austin—Grading, Fencing, &c.—The Capitol Furnishing Board, W. A. Rhea, president, will soon advertise for proposals for grading and fencing the Capitol grounds.

\$50,000 are available for the work.

Beaumont—Canning Factory.—A fish, fruit and vegetable canning factory is reported to be started soon.

Bremond—Grist Mill and Gin.—James W. White will rebuild his grist mill and gin reported last week as damaged by a boiler explosion.

Cleburne—Electric Light Plant.—E. M. Heath and C. W. Merty, of Cleburne; John Adamson and Owen J. Cook, of Fort Worth, and others have chartered the Cleburne Electric Light Co., capital stock \$25,000.

Dallas—Bridge.—Proposals for building the iron bridge across the Trinity river, previously reported, will be received until September 8 by W. M. C. Hill. It is to be located at or near Dawdy's ferry.

Denison—Repair Shops.—The Missouri Pacific Railroad Co. are erecting a pump repair shop.

Dublin—Hotel.—J. J. McLemore, previously reported as contemplating building a hotel, has had plans prepared for a two-story brick building, 65x100 feet, to cost about \$10,000.

El Paso—Hotel.—W. Gough, lately mentioned as to build a hotel, is now building it and will have it completed in about 6 weeks.

El Paso—Bridge.—The Santa Fe Street Railroad Co. have received permit from Congress to build their bridge across the Rio Grande river, previously reported. They will soon commence work. Materials have, it is said, been ordered.

El Paso—Gas Works.—A. W. Dutton and others contemplate adding gas works to their electric light plant and have asked for permit to build such works.

El Paso—Railroad.—Detwiler Bros. and Clay Parks have the contract to grade 16 miles of the Kansas City, El Paso & Mexican Railroad, previously reported, and will probably contract to grade 10 miles more. B. Metcalf has the contract to grade 4 miles.

Floyd—Gin.—The Farmers' Alliance are erecting a gin near Floyd.

Gainesville—Electric Light Plant.—Another incandescent electric light plant is reported to be erected.

Georgetown—Chair Factory.—J. F. Jaworek, of Louisville, Ky., previously reported as contemplating erecting a chair factory in Texas, will erect it at Georgetown if a \$5,000 bonus is raised. \$4,600 have been raised.

Granbury—Quarry.—The Granbury Quarry Co., capital stock \$10,000, has been chartered by D. C. Coysdell, A. L. Williams and F. F. Holts.

Houston—Laundry.—Newton & Richards have started a steam laundry. Their building is 50x100 feet.

Longview—Cotton Compress.—P. H. Woods and others will erect a cotton compress at once. A company will probably be formed with a capital of \$30,000.

Ranger—Coal Mine.—Parties are sinking a shaft to test deposits of coal.

San Angelo—Printing.—Malone & Haglstein have purchased \$4,000 of steam power machinery for their printing office.

San Angelo—Ice Factory.—The contract has been let for the erection of a building for the Colorado Ice Factory, lately reported as to be moved from Colorado to San Angelo.

San Antonio—Approaches.—The contract to build the approaches to the government building, previously mentioned, has been awarded to J. H. Coster, of Baltimore, Md., at \$17,161.

Tascosas—Water Works.—The Tascosas Water Co. contemplate extending their water works.

Van Alstyne—Flour Mill.—The flour mill of R. L. Bowen & Co. has been remodeled to the roller system.

Vernon—Flour Mill.—C. M. Barnes & Co. are building the roller flour mill previously reported.

Waco—Depot.—It is reported that the St. Louis, Arkansas & Texas Railroad Co. (office, St. Louis, Mo.) will soon build a new depot.

White Wright—Church.—The Baptists will build a church.

VIRGINIA.

Alexandria—Land.—The Charlton Heights Improvement Co. has been incorporated to deal in land by Benjamin Charlton, C. C. Duncanson and others.

Arlington—Green-house.—Proposals for erecting a green-house will be received until September 13 by G. B. Dandy at Washington, D. C.

Covington—Saw Mill.—E. M. Nettleton is building a band and circular saw mill 8 miles from Covington.

Falls Church—Brick-yard.—Isaac Crossman has, it is said, lately started a brick-yard.

Lovely Mount—Broom Factory.—A broom factory will be started.

Lovely Mount—Knitting Factory.—The Radford Knitting Co. will it is said, increase the capacity of their factory.

Lynchburg—Ties.—The Lynchburg & Durham Railroad Co. will receive bids for furnishing cross-ties for 6 miles of road.

Norfolk—Bridges and Trestles.—Ross & Sanford, of Baltimore, Md., have received the contract to build bridges and trestles on the Chowan & Southern Railroad, from

Drivers, Va. to Tunis, N. C., 36 miles, and from near Roberdel, N. C., to Tarboro, N. C., 37 miles.

Norfolk—Railroad.—The contract to build the Chowan & Southern Railroad from Drivers, Va., to Tunis, N. C., 36 miles, and from near Roberdel, N. C., to Tarboro, N. C., 37 miles, has been awarded to Harper, Bruce & Co., of Suffolk. They will commence work as soon as possible.

Norfolk—Soap Factory.—The Velline Manufacturing Co., previously reported as having started a soap factory, have incorporated as the Velline Soap Manufacturing Co., with William M. Elliott as president. The capital stock is to be not less than \$20,000 nor more than \$200,000.

Raymond—Brick-yard.—A brick-yard has lately been started by Mr. Antes.

Richmond—Railroad.—The Richmond, Fredericksburg & Potomac Railroad Co. are making surveys for a railroad from near Ballards to a point on the Petersburg Railroad near the old Broad Rock race course. A bridge will be built across the James river. The road will be to save hauling freight trains through Richmond.

Richmond—Electric Light Plant.—The Virginia Electric Light & Power Co. have added a new dynamo costing \$12,500 to their plant, previously reported, and will soon put in another similar machine. They will be for incandescent lighting.

Richmond—Street Railroad.—The City Railway Co. will not run their cars by electricity as previously reported. They will probably extend their road and operate part of their road with dummies.

Richmond—Gas Works.—The city council, previously mentioned as appropriating \$25,000 to add machinery for manufacturing water gas to the gas works owned by the city, have decided not to add the water gas machinery. They will add six benches of sixes on the regenerative coal plan. Proposals will be wanted.

Roanoke—Telephone.—The Norfolk & Western Railroad Co. are putting in a telephone exchange.

Roanoke—Machine Works.—It is reported that a new passenger car and a paint shop will be erected at the Roanoke Machine Works.

South Boston—Water Works.—Water works are to be built and proposals will be received until September 15 by W. D. Barbour.

Staunton—Church.—The contract to build the new church for the Lutherans, previously reported, has been let to J. M. Wilson.

Virginia Beach—Hotel.—The Norfolk & Virginia Beach Railroad Co. will enlarge their hotel, improve the heating and lighting facilities, &c.

Williamsburg—College.—There is talk of erecting a building to be used as a female college.

WEST VIRGINIA.

Martinsburg—Iron Mining.—Jacob W. Humer, W. H. Humer and E. E. Thrush, of Pennsylvania, will develop the iron ore on the land owned by the estate of the late C. J. Faulkner. They will commence mining at once and will ship to Pittsburgh.

Parkersburg—Bridge.—The contract to build the new iron bridge across the Kanawha river, lately mentioned, has been awarded to the Wrought Iron Bridge Co., of Canton, O., at about \$24,500. It will be 206 feet long.

Parsons—Lumber Mill, &c.—The Cheat River Boom & Manufacturing Co., capital stock \$10,000, has been chartered.

Wheeling—Bridge.—\$50,000 will be appropriated by the city council to build a new bridge at Market street. It is to be a wrought iron bridge with a span of about 170 feet. The mayor can give information.

Wheeling—Iron Works.—The La Belle Iron Works will, it is said, build an addition to their mill to manufacture sheet and channel-iron.

BURNED.

Baltimore, Md.—A fire on September 2 destroyed about from \$1,000,000 to \$1,500,000 of property including the straw hat factory of M. S. Levy & Sons (loss on machinery \$9,000); the trimmings factory of William Seyfert; the shirt factory of Steppacher & Stern; the steam dyeing establishment of Stephen Schoedl, and the clothing factory of Samuel Brafman. M. S. Levy & Sons will rebuild if they can secure a suitable location.

Birmingham, Ala.—The brick works owned by Messrs. Wilson, Martin and others and leased by Moore & Knighton; loss \$2,500.

Botetourt County, Va.—The saw mill of Mr. Kerns damaged by a boiler explosion.

Carrollton, Ala.—The mill and gin of James Hamner, 8 miles from Carrollton; loss \$1,300.

Charlotte, N. C.—The cotton compress owned by the Charlotte Compress Co.; loss \$50,000. Work on another compress has been commenced by other parties.

Chestertown, Md.—The evaporating factory of Groves, Loud & Henry; loss \$2,000 or \$2,500.

Denton, Texas.—The factory of the Denton Ice Co. damaged by a boiler explosion.

Dodge County, Ga.—The saw mill of Wilcox & Powell; loss \$1,000.

Floyd County, Va.—The mill of Joseph L. Howard.

Fort Worth, Texas.—The chewing gum factory and coffee roasting establishment of Mr. Provine.

Hallam, Ky.—The lumber mill of Lynn Cobb.

Milltown, Ga.—The rice and corn mills, &c., of Mr. Banks, near Milltown.

Montmorenci, S. C.—The saw mill of E. B. Curtis; loss \$11,000. Will be rebuilt.

Mount Holly, Md.—The saw and grist mill of W. F. Grierson wrecked by a boiler explosion.

South Pittsburg, Tenn.—The Perry Stove Works damaged by a boiler explosion.

Temple, Ala.—The cotton gin of W. H. Hunner.

Wetumpka, Ala.—The machine shop of H. J. Davis, Jr.

Barrel Factory.

CANTON, GA., Aug. 27, 1888.

Editor Manufacturers' Record:

A marble mill will probably be built by J. A. Dewar, of the Blue Ridge Marble Co., Nelson, Ga. A barrel factory is now being located at this place by Channell & Jones. They will work some 15 or 20 hands now, and probably increase later on. Canton wants any kind of manufacturing enterprises, and is ready to aid in every possible way.

BEN. F. PERRY.

Starting Cotton Batting Factory.

COLUMBIA, S. C., Aug. 31, 1888.

Editor Manufacturers' Record:

Have purchased machinery for an 11-card batting mill to be operated in this city, under the name of the Miller Cotton Batting Co. Capital stock \$10,000. All owned by our firm. Output of mill will be 1,500 lbs. cotton bats per day. MILLER BROS.

WOODBURY, GA., Aug. 31, 1888.

Editor Manufacturers' Record:

Mr. J. M. & F. J. Williams, of this place, (Woodbury) think of building a steam gin and guano factory here some time in the next six or eight months.

The Oak Mountain Variety Works will start making chairs in two or three weeks. Would like to correspond with parties in regard to broom machinery; also chair bottom stuff, cane, &c. J. T. GILBERT, Man.

MACHINERY WANTED.

If you desire to purchase machinery of any kind consult our advertising columns, and if you cannot find just what you wish, send us particulars as to the kind of machinery needed. We will make your wants known free of cost, and in this way secure the attention of machinery manufacturers throughout the country. You will thus get all information desired as to prices, etc.

Bridge.—W. M. C. Hill, Dallas, Texas, will receive proposals until September 8 for building an iron bridge across the Trinity river at or near Dawdy's ferry, in Dallas county.

Bridge.—The Memphis & Charleston Railroad Co., Memphis, Tenn., will receive proposals for a new channel span and draw for their bridge across the Tennessee river at Florence, Ala.

Bridge.—Proposals for building an iron bridge over Mill creek, near Dalton, Ga., will be received until October 9 by J. P. Freeman. It is to be 80 feet long.

Broom Machinery.—The Oak Mountain Variety Works, Woodbury, Ga., want to purchase broom machinery. They solicit correspondence in regard to chair bottom stuff, cane, &c.

Broom machinery will be wanted by the Graysville Mining & Manufacturing Co., Graysville, Ga.

Corn mill machinery is wanted by Rice, Tapp & Givens, Providence, Ky.

Electric Lights.—Proposals for lighting Natchez, Miss., with electric lights will be received until November 1 by the mayor, William H. Mallory.

Electric Light Machinery.—H. B. Peters, Greensboro, N. C., wants to correspond with manufacturers of electric light machinery.

Electric Light Plant.—Panie & Dalton, Aberdeen, Miss., solicit correspondence with manufacturers of electric light machinery, both arc and incandescent. The capacity of the plant is to be for at least 25 arc lights, &c.

Engine, Boiler, &c.—George W. Chambers, Talladega, Ala., wants to purchase a 50 horse-power engine and boiler, one Blake crusher, and one nine-foot pan and four-foot roll, all second-hand.

Fire Apparatus.—The city council of Chattanooga, Tenn., will purchase fire engine, truck, hose reels, &c.

Fire Engines.—The mayor of Mobile, Ala., will purchase two fire engines.

Fire Hose.—The board of public affairs of Little Rock, Ark., will purchase 1,000 feet of fire hose.

Gas Works.—Proposals for enlarging the gas works at Richmond, Va., will shortly be advertised for. The mayor can give information.

Hoisting Engine and Boiler.—Horace Stokes, Stafford, Md., wants to purchase a six horse-power hoisting engine and boiler. He is operating a quarry.

Lumber Dryers.—W. R. Burgess, Greensboro, N. C., wants information about and prices of improved lumber dryers.

Oil Machinery.—A. H. Tardy, Danville, Va., wants the address of manufacturers of machinery for cotton-seed oil mills.

Retort.—Gray & Gatchell, Leliaton, Ga., want the address of manufacturers of retorts for extracting chemicals from saw dust.

Rolling Mill Machinery.—The Rome Land Co., Rome, Ga., want to purchase rolling mill machinery.

Water Works.—A. Offutt, Lebanon, Ky., will receive proposals for building water works and for furnishing pumping machinery of 1,000,000 gallons daily capacity until September 19. The reservoir is to have a capacity of 1,250,000 gallons. J. D. Cook, of Toledo, Ohio, is engineer, and will give all particulars.

Water Works.—Proposals for building water works at South Boston, Va., will be received until September 15 by W. D. Barbour.

Wood Pulp Machinery.—H. S. K. Morrison, Estillville, Ky., wants information in regard to the manufacture of wood pulp and machinery needed.

To Build Railroad.

UNION CITY, TENN., Sept. 1, 1888.

Editor Manufacturers' Record:

The Union City, Louisville & Memphis Railroad Co. has been organized here, with myself as president, to build a short railroad having Rives for a terminus south of us, and Fulton, Ky., as Northern terminus. Both points are on Newport News & Mississippi Valley Railroad. Rives is only three miles from us, and we are cut off from the advantages of the Newport News & Mississippi Valley Railroad by only three miles. We will by our new line gain one more long line, as competitor of the two lines of railroad we now have. We expect to push the enterprise. Our firm also contemplate erecting a wheel factory in connection with our spoke factory, at an early day. Capacity 75 sets daily.

W. H. GARDNER.

Stamp Mill to be Erected.

ST. LOUIS, MO., August 29, 1888.

Editor Manufacturers' Record:

The American Mining Co. expect to erect a five-stamp mill on their gold mine, the Sand Carbonate, in Saline county, Ark., during September, 1888. X

To Double Fire-brick Works.

ANNISTON, ALA., August 29, 1888.

Editor Manufacturers' Record:

Last week we purchased some fire clay lands at Weavers. The clay will be used in our works at Anniston. We expect to double our capacity at Anniston in the near future. Trade is good and plenty of it.

C. TAYLOR & SON.

Contracted to Build Railroad.

SUFFOLK, VA., September 3, 1888.

Editor Manufacturers' Record:

We have contracted for the earth work for the Chowan & Southern, 64 miles. Are to complete by July, 1889. Subcontractors with outfits, wanting to sublet in 5 and 10 mile sections, can correspond with us.

HARPER, BRUCE & CO.

To Build Dummy Railroad.

FLOVILLA, GA., Aug. 28, 1888.

Editor Manufacturers' Record:

We intend to build a dummy line three miles long, from this place to Indian Spring. We intend building this fall and winter, to be in operation by next May or June.

W. F. SMITH.

Stave and Shingle Mill.

BERRY, N. C., Aug. 27, 1888.

Editor Manufacturers' Record:

We will on September 3d start up the manufacture of staves and shingles, in addition to other lumber business. Will use 25 horse-power boiler and 30 horse-power thrasher engine. Capacity will be 20,000 staves and 10,000 shingles per day.

C. W. MORLEY & CO.

Remodeling Flour Mill.

LA FAYETTE, ALA., Aug. 27, 1888.

Editor Manufacturers' Record:

We are putting in a full roller new process mill in place of old bass mill. Nordyke & Maymon Co., of Indianapolis, Ind., are doing the work; our old mill was 40 bbls. capacity, the new mill will be 60 to 75 bbls.

J. M. TRAMER & CO.

The Tube-Iron Freight-Car.

We call the attention of railroad men to the revolution that is being effected in the railroad world by the substitution of cars of high carrying capacity and light weight for the old-time equipment, the load of which has been little, if any, greater than the weight of the car itself.

This tendency has been manifest in some degree in the wooden cars of recent construction, but it is claimed that it is receiving its highest development in the construction of cars entirely, or almost entirely, of tube-iron. The latter material permits of a marked reduction in the weight of the car itself, and a still more remarkable augmentation of its carrying capacity. From the circular of the Iron Car Co. we take the following:

"The best proportion between the dead weight and paying load of the wooden car is as one to two—a 20,000-pound car will carry 40,000 pounds of load.

The tube-iron car weighs from 18,000 to 24,000 pounds, according to size and weight of the freight box. Its regular load is 60,000 pounds. If the car be returned empty the maximum dead tonnage would be 48,000 against 60,000 pounds paying load. This is a saving of 20 per cent. in the total dead tonnage over the proportion of one to one.

Twenty per cent. of 1,307,539,806 live mile tons is 261,507,961 mile tons.

Multiply this by the cost of moving one mile-ton (.000182486) and we have the amount.....	\$284,403 85
Add the cost of moving the excess of dead mile-tons over the ratio of one to one.....	904,672 50
Total.....	\$1,189,076 35

This represents the saving in operating expenses that would have occurred to the Reading Road had its coal traffic been conducted in iron cars weighing not to exceed 19 tons and carrying loads of 30 tons.

On its business in iron, iron-ore, stone and other heavy freights capable of being hauled in low-sided gondola cars the proportionate saving would have been greater since the gondolas weigh from 9 to 10 tons and carry a load of 30 tons.

The question of repairs is an important one. The oldest train of tube-iron cars extant has been running ten years, and it was recently reported that nothing had ever been expended on these cars except to occasionally paint them.

Out of nearly two thousand cars put into service during the past year the regulations for material for repairs have been infinitesimal, and nearly all of these have been cases of wrecks in which more or less wooden cars have been badly smashed or utterly wrecked. As a rule, in cases of collision, the iron cars come out almost unscathed where wooden cars are destroyed. It would seem that the question of repair in the case of iron cars

has been reduced to so low a factor as to be practically eliminated.

But it is not merely the matter of the dollars saved in actual outlay for repairs: there is the more important question of having the car for service when wanted. The time that a car is laid up in the shops awaiting its turn to be repaired does not involve merely a loss of interest on the value of the car for the time it is laid off, plus the actual outlay on it, but often it represents a loss of business, which cannot be done for lack of cars.

A few reasons why it will supersede the wooden car:

It is from 2,000 to 5,000 pounds lighter. It will carry from 10,000 to 40,000 pounds more than wooden cars now in use. Its capacity is 60,000 pounds and upwards.

Being built almost exclusively of double-refined iron and steel, it is durable.

Cost of repair is reduced to a minimum; cars are now running after five years' service without other repairs than an occasional coat of paint.

The saving due to lessening of dead weight is more than equal to the mileage on an ordinary car.

The saving due to increased load is more than equal to first cost of car.

The car rides as lightly as a buggy, thus reducing the wear and tear upon rails and road-bed.

The length of train being shortened one third to one-half, the engine power is reduced in proportion.

A less number of cars being required, the saving in dead weight may be utilized by a corresponding increase in paying load.

The draw-frames are the strongest ever devised; they are invulnerable to an impact that will wreck the wooden cars.

In case of a wreck the salvage on the tube-iron car greatly exceeds that of the wooden car. All the parts being interchangeable, the injured portions may be readily removed and replaced with new parts.

The car is very elastic; the movement around curves is noticeably easier upon the engine than in trains of wooden cars."

MR. JOS. HOBGOOD, of Battleboro, N. C., wishes to erect a plow factory at some good point in the central South, Georgia preferred, and wants to know of a desirable location for such.

LEXINGTON, GA., Sept. 1, 1888.

Editor Manufacturers' Record:

A standard gauge railroad will be built from this place to Crawford, Ga., a town on the Athens Branch Georgia Railroad, which will be about 3 or 3½ miles in length. Hamilton McWhorter is president.

T. G. LESTER, Sec.

WADESBO, N. C., Aug. 30, 1888.

Editor Manufacturers' Record:

We are increasing the capacity of our factory, and will continue to add machinery as fast as the help learn to operate it.

WADESBO SILK CO.

ANOTHER great deal has been consummated with Eastern capitalists for heavy investments in the South, and this time Chattanooga is the fortunate city. Negotiations extending over several months have resulted in a contract on the part of the Chattanooga Land, Coal, Iron & Railway Co. and Eastern capitalists, by which the latter agree to invest \$1,250,000 in carrying out the plans for the development of this company's property, within two years. This, however, is only a small part of the actual results, for this contract will draw heavy investments from other Eastern men. Chattanooga is to be congratulated. Southward capital takes its way.

HENDERSON, KY., Aug. 31, 1888.

Editor Manufacturers' Record:

The Princeton Iron & Manufacturing Co. is incorporated with a capital of \$15,000, with headquarters at Henderson, Ky., by C. C. Gerrung, J. F. Clay, W. P. Clarke, S. H. Cassidy and S. McElpatrick.

C. C. GERRUNG.

C. R. MAKEPEACE & CO.
ARCHITECTS and MILL ENGINEERS
PROVIDENCE, R. I. Plans, Specifications and Estimates furnished for Cotton and Woolen Mills.

LOCKWOOD, GREENE & CO.

MILL ENGINEERS,
NEWBURYPORT, MASS.

PLANS AND SPECIFICATIONS FURNISHED FOR THE CONSTRUCTION, EQUIPMENT AND ORGANIZATION OF COTTON AND WOOLEN MILLS.

ELIAS EDMONDS,
Attorney at Law
SAN ANTONIO, TEXAS.

Makes the Litigation of Land Titles a specialty. Will also Lend Money for non-residents upon the best real estate security.

BANKERS AND BROKERS.

WILSON, COLSTON & CO. [Members of Baltimore Stock Exchange.]
Bankers & Brokers,
216 E. Baltimore Street, Baltimore, Md.

Investment and Miscellaneous Securities a specialty, and large lines handled. Exceptional facilities for dealings in all classes of Southern Bonds. Loans on Collateral Securities negotiated. Quotations and information furnished on application, and correspondence invited.

WANTED!

Good second-hand machinery. One nine-foot Pan and four-foot Roll; also, 50 horse-power Engine and Boiler; also, one Blake Crusher. Address GEORGE W. CHAMBERS, Talladega, Ala.

TO MANUFACTURERS!

I have a Brick and Iron Warehouse, 50,000 feet, 2 stories, 7-foot dry cellar; 150 feet private side track on railroad; well located for a small factory. Will put in building and some cash with any one who will use it as a factory. Good location. 30,000 people. Seven railroads. Navigable river. Address J. A. WALKER, Columbus, Ga.

Mineral & Timber Land Co.

OF THE SOUTH.

Capital - \$100,000.

Ex Gov. John C. Brown..... President
Jere Baxter..... Vice Pres't and Gen'l Mgr
J. H. Moore..... Vice President
T. F. Allison..... Vice President
Lewis T. Baxter..... Secretary and Treasurer

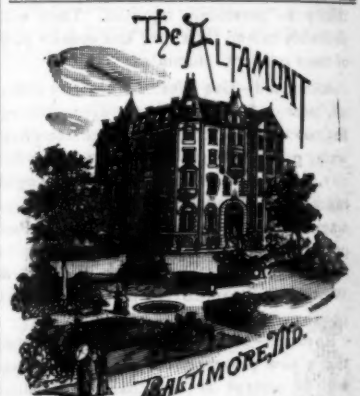
Mineral and Timber Lands in the Southern States Bought and Sold on Commission.

Agencies in New York, Chicago, Boston and London.

We call the attention of owners of large tracts of land to the unusual advantages offered by this Company. Address

LEWIS T. BAXTER,
Secretary and Treasurer,
Nashville, Tenn.

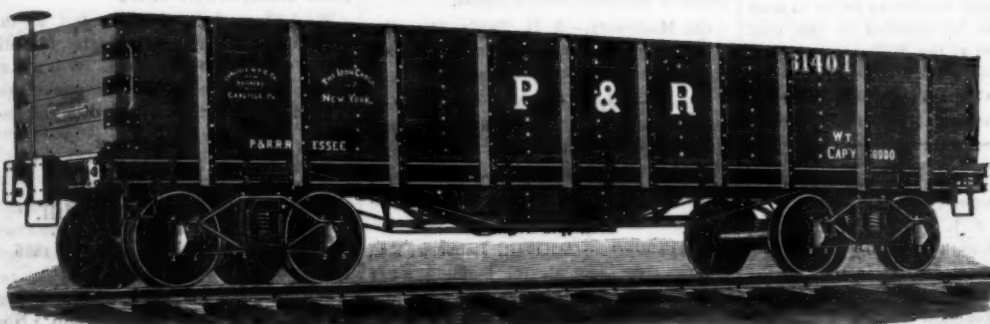
References: The bankers and business men of Nashville, Tenn.



ENTIRELY NEW. HOME-LIKE. ELEGANT.
HIGHEST ELEVATION ON HANDSOMEST STREET.
American Plan, \$3.00 to \$4.50 per day.
Telegraph for Rooms at our expense.
C. WARNER STORK, Proprietor.

If you wish to keep posted on the progress of the South, read the MANUFACTURERS' RECORD. Price \$4.00 a year.

The Tube-Iron Freight-Cars.



If you are immediately or prospectively in need of equipment it will pay you to become familiar with the tube iron freight cars.

We are prepared to furnish them promptly in quantities and on terms to suit.

We build them in all styles—flat, drop-end gondola, drop-bottom coal, hopper-bottom coal, hopper-bottom coke, stock and box.

These Cars stand in the highest class as regards durability and immunity against fire, and being 20 per cent. lighter, make one-fifth less dead weight to haul.

The number of tube-iron cars built by The Iron Car Company within 18 months is nearly 2,500.

For fuller information, photographs, &c., address

THE IRON CAR COMPANY, 115 Broadway, New York

BUSINESS OPPORTUNITY, \$10,000.

A part interest in a successfully running and profitable manufacturing business in a large, healthy Southern city, with a good office position if desired. Investigation solicited. Address SUCCESS, care of MANUFACTURERS' RECORD.

**YOUNG MAN, GO SOUTH!
Here's a Chance For You!**

A live, go-ahead person with some musical experience, or better still a musician, can get an opening in a healthy and prosperous business in the Model City, the most progressive town in the South. \$2,000 to \$3,000 necessary. No retired capitalists or sleepy heads need write; we want a "Jasher." Address THE NEWTON MUSIC & ART HOUSE, Prof. N. E. Solomon, Manager, Anniston, Ala.

A Mechanical Engineer,

of good business capacity and large experience, wishes to invest a few thousand dollars in some good enterprise in the South. Address CAPITAL, care of MANUFACTURERS' RECORD.

**FOR SALE. MACHINERY AND CHAIN
OF MARINE RAILWAY.**

One Horizontal Cylinder BOILER, 24 feet long by 34 inches diameter, with steam drum 30 by 30 inches, estimated 20 horse power.

One ENGINE, 24 by 10 inches cylinder, estimated 25 horse power.

One complete (heavy) set of Triple GEARING; will haul out a vessel of 500 tons.

One two-inch Stud-Link CHAIN, (50 fathoms), hand-made, of best iron.

One old Cylinder BOILER, 24 feet by 24 inches, used as water-tank.

Engine and Machinery in complete order. Boiler in good order, sustaining a hydraulic pressure of 100 pounds to the square inch. Apply on the premises, No. 1315 Philpot Street, or to

GEO. W. CORNER,
11 South Gay St. Baltimore, Md.

PORTLAND CEMENT.

German and English Brands of Best Quality.

Send for tests and all particulars to
ERSKINE W. FISHER,
WELLES BUILDING, No. 18 Broadway, NEW YORK.

**FOR SALE Cotton and Woolen
Machinery.**

In full lines for both plain and fancy manufacturing in all departments. In stock. Also for Bleaching, Dyeing and Printing. Engines, Boilers, Tools and Supplies.

W. SEABURY SIMMONS,
23 Chambers Street, New York.

GRIST MILL FOR SALE.

The undersigned offer for sale the following Grist Mill, etc., the same now located on their premises, where room and power can be hired if desired:

1 Run 48 "French Burr Stone."

2 " 36 " " "

Conveyors, Bins, etc. Also Flour Packer and Mixer.

SLATER MILL AND POWER CO.
Providence, R. I.

**Cotton and Woolen
MACHINERY.**

50 Crompton Fancy Cotton Looms, nearly new, 36 inch reed space, for 12 Harnesses, 4 boxes at one end, 1 at the other.

My Store Houses here have over 2 ACRES of storage, which is covered with good machinery, including nearly full systems for Cotton and Woolen Mills.

JEREMIAH CLARK,
Lowell, Mass. Office, 108 Middle St.

FOR LEASE.

The Privilege of Bottling, Selling and Shipping the NATURALLY ELECTRIFIED MINERAL WATERS of the GEORGIA ELECTRIC MOUND COMPANY at the CELEBRATED ELECTRIC HEALTH RESORT of HILLMAN.

By the use of these famous Waters the most astonishing cures have resulted in cases of Rheumatism, Neuralgia, Dyspepsia, Kidney Diseases, Liver Troubles, Insomnia, Loss of Appetite, Nervous Prostration, Diseases peculiar to Women, Paralysis in its Early Stages, Overtaxed Mental Faculties, Excessive Indulgence in Alcoholic Stimulants and General Debility.

For full information, address
R. F. BROWN,
Hillman, Tallahassee Co., Georgia.
Resort Open the Year Round. First-Class Hotel Accommodations.

**3 New Marine Steel Boilers,
ONE HUNDRED AND FIFTY HORSE-
POWER EACH; CAN BE USED TO-
GETHER IN ONE BATTERY OR SEPA-
RATELY. NOW STORED AT APALACHI-
COLA, FLA. For terms, address**

The FILER & STOWELL COMPANY,
MILWAUKEE, WIS.

SPECIAL NOTICE

**AND SALE OF
Extra Quality Rubber Hose.**

We have on hand and will close out at the following specially low figures:

3,000 ft. 1/2 inch 3-ply hose at 10 and 12 cts. per ft.
3,000 ft. 1 inch 4-ply best quality steam or air-brake hose, suitable for brewers' and general use, (where first-class hose is required) at 30 cts. per ft.
1,700 ft. 1 inch 3-ply hose, at 15 cts. per ft.
1,000 " 1 1/2 " 3 " " " " 19 " "
900 " 1 1/2 " 4 " " " " 24 " "
750 " 1 1/2 " 3 " " " " 23 " "
1,000 " 1 1/2 " 4 " " " " 27 " "
500 " 2 " 4 " " " " 35 " "
700 " 2 1/2 " 4 " " " " 35 " "
1,000 " 2 1/2 " 4 " " " " suitable for fire engines, at 55 cts. per ft.

All the above hose is strictly first-class quality, and we shall be pleased to have your orders for 50 to 100 feet or more

REUTER & MALLORY,
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1,000 Acres of High Land situated on the north end of Blythe Island, Glynn County, Georgia, immediately opposite the terminus of the East Tennessee, Virginia & Georgia Railroad, and in full view of the city of Brunswick. These lands are heavily timbered with yellow pine, cypress, red and live oak, and is the best location on the Georgia coast for a first-class Steam Saw Mill. Timber in the greatest abundance as he had or bought, delivered at the boom at from \$4.50 to \$7.00 per M. for pine, \$6.00 to \$10.00 per M. for cypress. I will donate an excellent mill site to any company guaranteeing the erection of a mill. The E. T. V. & G. R. R. Co. are now building an addition of 700 feet wharf frontage, large Cotton Compress, Warehouses, &c., immediately opposite these lands. No difficulty in shipping! Vessels of the heaviest draft can load within 30 feet from shore at low tide. Prospectors will do well to investigate. For further particulars address,

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**FOR
Manufacturing Purposes.**

The Shops of the Norfolk & Western Railroad Company at Petersburg, Va., made vacant by the removal of Division Shops to Crewe, Va. The buildings are located upon a tract of about five acres of ground, with side-tracks reaching each building. They consist of

One (1) Building, 63ft.x180ft.

One (1) Building (Machine Shop and Smith Shop, with Engine and Shafting), 60ft.x182ft.

One (1) Building (for Boiler and Steam Hammer), 46ft.x60ft.

One (1) Building (Foundry), 56ft.x81ft., with two (2) extensions 20ft.x40ft.

One (1) Building (Car and Wood Working Shop), 63ft.x123ft., with addition 45ft.x46ft.

The buildings are mainly of brick, with metal or slate roofs

The location at Petersburg, with cheap supplies in the way of coal, coke, pig iron, bar-iron, lumber, &c., makes the location a favorable one for the manufacture of cast-iron water pipe, or the establishing of a foundry and machine works, wagon works, or agricultural implement manufactory.

Parties desiring to examine the grounds and buildings can see descriptive maps by calling upon H. V. L. Bird, Agent Norfolk & Western Railroad, Petersburg, Va.

For further information and map of the grounds and buildings, with terms of rental, apply to **JOS. H. SANDS,** General Manager, Norfolk & Western Railroad, Roanoke, Va.

For freight rates on manufactured articles, raw material and sources of supply, address **A. POPE,** General Freight Agent, Roanoke, Va.

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ROANOKE, VA.

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**250,000
ACRES OF
Timber & Agricultural
LANDS**

In the Counties of Clay, Greene, Craighead, Poinsett, Mississippi, Cross, St. Francis, Crittenden Woodruff and Monroe, in the State of

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Four Million Feet of Cypress and One Million Feet of Pine.

Located at Epes' Station, a point where the A. G. S. R. R. crosses the Tombigbee river, and is about 100 miles distant from Birmingham. Timber commences on bank of river and none over one-half mile distant. River navigable above Epes' Station for 150 miles for boats. Lumber can be transported by either railroad or river. Enough cypress, pine, white oak, hickory, ash, gum, poplar and beech to last a good mill 20 years. Can be bought for \$5,000, one-half cash, balance on time.

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1 36-in. 1 Beater Breaker Lapper. } English.
1 36-in. 1 Beater Finisher Evener. }
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1 36-in. 3 Beater, Whiting's.
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1 30-in. 2 & 3 Beater, Whiting's.
1 36-in. Welman Stripper, Whiting's Cards.
1 36-in. Welman Stripper, Saco Water Power.
1 30-in. Welman Stripper, Whiting's.

All this machinery is first-class. For further particulars apply to
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Equipment of Railway and Car Works,
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RAIL AND TRAM ROAD.
Light Sections Rails and Spikes in stock.
Locomotives, Logging Cars, etc.

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Railway Equipment.**

14 Excursion Cars, in good repair, repainted Pullman, color and lettered to suit. Nearby immediate delivery.
16 Passenger Cars, all that remain of 70, on hand beginning of season.
Locomotives, entirely rebuilt, good as new. We have Passenger, Freight, Mogul, Switching and Motor Patterns for immediate delivery.
Freight Equipment of standard and narrow gauge, in great variety.

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10 WALL STREET.

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200 Tons 56 lb. T rail fit to relay.
10 Locomotives, different gauge.
40 Logging Cars, do.
35 Construction Cars, do.
20 Dump Cars, do.
2 Steam Shovels. 2 Air Compressors.
3 Rock Crushers.
4 Steam Street Road Rollers.
3 Alligator Shavers. 1 Deep Well Pump.
3 Blowers. 7 Hoisters, steam.
2 Diamond Drills.

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T. William Harris & Co.**
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Engines Lathes—34 in. x 30 ft.; 36 in. x 14 ft.; 34 in. x 15 ft.; 1 each 24 in. x 30 in. and 24 ft.; 24 in. x 10 ft. bed, Field; 24 in. x 15 and 16 ft.; 24 in. x 20 ft.; 24 in. x 10 and 15 ft.; 18 in. x 10 ft.; 20 in. x 10 ft.; 20 in. x 12 ft.; 2 each 16 in. x 6, 8 and 10 ft.; 6 each 14 in. x 6 ft.; 1 19 in. x 5 ft.; 4 each 15 in. x 6 ft.; 2 each 11 in. x 4 ft. and 5 ft.; 1 10 in. x 3 1/2 ft., foot power.
1 Brass Turret Lathe.
1 each Planer, 24 in. x 24 in. x 5 ft. and 8 ft.
1 " 30 in. x 30 in. x 8 ft.
1 Planer, 36 in. x 30 in. x 7 ft.
1 " 40 in. x 40 in. x 14 ft.
1 Screw Planer, 18 in. x 3 ft.
1 Shaper, 6-in stroke. 1 12-in. Shaper, two tables
1 " each 12, 15, 20 and 24 in. stroke.
1 24-in. Hendey Shaper.
1 Crank Planer. 6 Lincoln Pat. No. 2 Millers.
1 each 3 and 6 Spindle Gang Drill.
1 each No. 1 and 2 Screw Machines. Wire Feed.
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1 400-lb. Merrill Drop Hammer.
1 each 40 & 60 lb. Vertical Hammers.
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1 No. 5 Stiles Gearing Press.
20 Foot Presses, assorted. 5 Power Presses, assorted.
25 Punching and Shearing Machines, assorted.
2 Return Tubular Benders, 35 H.-P.
1 National Belt Cutter, 14 in. 20 x 1 in.
1 Belt Cutter, 14 in. to 1 1/2 in. Good order. A.J. head, Merriman.
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Also full line of New Machinery.
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20 12-5, 10-5, 9-4 1/2 Stubber's, different makes.
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100 Spinning Frames, 1 1/2 in., 1 1/4 in., 1 in., 9 in. & 5 1/2 Ring, common, Spindle Taper, Rabbit Sawyer Spindles.
50 Twistors, 1 1/2 in., 1 1/4 in., 1 in., 9/16 in., 5/8 in., 3 in 3/4 Ring.
20 Spinners of different makes.
16 Carpenter Reels.

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L. GODFREY & CO.
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Oldest and Best
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Over 13,500 in use.
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Headquarters for Iron Fence,
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Manufacturers of
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OF EVERY DESCRIPTION.
Write for our prices.

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BICYCLES.
NO STRONGER BICYCLE MADE.
A. W. GUMP & CO., Dayton, O.
50 inch, factory price \$60.00, our price \$40.00
48 " " " 50.00 " " 35.00
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Order quick. Also 20 second-hand wheels. Repair-
ing and rebuilding. Bicycles & Guns taken in trade.

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DURABLE
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OF CITIES AND TOWNS
MANUFACTURERS OF THE LAMP
VAPOR GAS BURNERS, FLUENTS,
LAMP GLASS, AND ALL THE
KINDS OF STREET LAMP GLASS
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LAMP GLASS, AND ALL THE
KINDS OF STREET LAMP GLASS
CANTON, MICH.

ROANOKE CITY, VA.

POPULATION 1881, 400.

POPULATION 1888, 12,000.

Roanoke City is located in the mountains of Virginia, 1,000 feet above sea level—between the Blue Ridge range on the east and Alleghany range on the west.

It has an elegant Courthouse, Market-House, Opera House, Public School Houses, Firemen's Hall and many other public buildings.

Has a Gas Company with a capital of \$120,000.

Has an Electric Light System, both arc and incandescent—in course of construction.

Has a system of Water Works, the finest in the State, worth \$250,000.

Has 12 churches, representing nearly every denomination.

Has four banks, operating on an aggregated capital of \$450,000.

Is the headquarters of the Norfolk & Western Railroad Company, which employs 300 clerks.

Is the headquarters of the Shenandoah Valley Railroad, which employs 75 clerks.

Is the headquarters of the Pocahontas Coal Company, the largest coal operators in the world.

Is the headquarters of the Virginia Steel Company, which is backed by \$5,000,000 in cash.

Is the headquarters of the Virginia Company, operating on a large capital.

Is the headquarters of the Washington & Western Railroad Company.

Is the headquarters of the Virginia Mineral Railroad Company.

Is the headquarters of the Roanoke & Southern Railroad Company—now under construction.

Has a large wholesale and retail trade, embracing sixteen of the most productive counties in the Old Dominion, and its wholesale trade extends into West Virginia, Tennessee and North Carolina.

Has the most delightful and healthiest climate in the world.

Has, within fifty miles of it, a dozen of the most famous watering places in America.

Has The Crozer Steel & Iron Company, operating on a capital of \$500,000, employing 300 men, and turning out 120 tons of pig iron per day.

Has the Roanoke Machine Works, with a capital of \$1,000,000, and employing 1,000 men.

Has the Roanoke Rolling Mill, with a capital of \$150,000—in course of erection.

Has a Roller Flouring Mill, valued at \$15,000.

Has the Diamond Ice & Refrigerator Company, capital \$25,000.

Four Planing Mills, with a capital of \$25,000.

The railroads and various manufacturing enterprises of Roanoke have monthly pay rolls aggregating \$150,000, all of which is paid to citizens of Roanoke.

Has four hotels capable of accommodating 600 guests; Hotel Roanoke cost \$80,000.

375 houses were erected in Roanoke City during 1887, and at least 800 will be erected during 1888. There are at present 200 buildings under construction.

The bonded debt of Roanoke City is smaller than that of any city in the South of equal size, being less than \$150,000. The city tax rate is \$1.10 on the hundred dollars—lighter than that of any city in the South.

Roanoke City will spend, during 1888, \$16,000 for public school buildings; \$25,000 for sewerage; \$25,000 for streets, and about \$15,000 for miscellaneous public improvements.

An Opera House Company has been chartered and will erect a \$50,000 theatre building.

The Roanoke Street Railway & Transportation Company has been chartered and will construct three miles of street railway.

The Home Building & Conveyance Company has been chartered and are now building and preparing plans for 100 residences.

Has the Roanoke City Mills, capital \$20,000.

Trade of Roanoke has increased 300 per cent. during the past three years.

1,000 miles of railroad now in operation, focus at Roanoke.

Roanoke is 258 miles west of Norfolk, and 150 miles east of Bristol, on the Tennessee line.

The only city of any consequence within 300 miles of Roanoke is the city of Lynchburg, by the James.

Roanoke is the supply depot for a territory embracing 16 counties in Virginia and many of the border counties of West Virginia, Tennessee and North Carolina.

Roanoke is the headquarters of nearly all the mining companies now operating in the Southwest.

Has the largest fruit and vegetable canning factory in the South, with a capacity of 15,000 cans per day.

Has the Roanoke Land & Improvement Company, operating on \$600,000 capital.

Has four Building and Loan Associations, capital \$350,000.

Has the Roanoke River passing along its borders, furnishing unsurpassed water power for manufacturing purposes.

Has more undeveloped mineral wealth within easy reach than any city in the South.

Roanoke will soon be the terminus of two divisions of the Norfolk & Western Railway system, thus adding 1,500 to its population.

Roanoke is building a Masonic Temple to cost \$25,000, and a Y. M. C. A. building to cost \$20,000.

Real estate is from 100 to 200 per cent. cheaper in Roanoke than in any city of promise in the South.

Roanoke will have a population of 25,000 souls when the census of 1890 is taken.

We want men of money and men of muscle.

Has the West End Land Co., operating on a capital of \$40,000, paid up.

ATHENS, East Tennessee,

THE COMING

→ Iron and Manufacturing City of the South. ←

Athens is the county seat of one of the most fertile counties in East Tennessee. The health of the city is unsurpassed, and is **ABSOLUTELY FREE FROM ALL MALARIAL OR EPIDEMIC DISEASES**. The surrounding scenery is very fine. From the main avenue the whole valley of East Tennessee can be seen, from the Cumberland Mountains on the west to the Great Smoky Mountains on the east; some of the tallest peaks east of the Rockies being in full view. **FINE MINERAL SPRINGS** are adjacent and are popular summer resorts. The society of Athens is excellent. A cordial welcome is extended to all law-abiding people locating in the town. The **EDUCATIONAL FACILITIES** are good. Beside public and preparatory schools, Athens is the seat of **THE GRANT MEMORIAL UNIVERSITY**, which has an enrollment of over 300, and whose graduates include some of the most distinguished citizens in the country. Among the industries and institutions of the place in active operation are:

THE ATHENS BUILDING & LOAN ASSOCIATION, \$250,000. THE ATHENS WOOLEN MILLS, \$100,000.

THE FIRST NATIONAL BANK, \$50,000.—To be increased at once.

FOUNDRY & MACHINE SHOPS, \$25,000.

FURNITURE WORKS, \$15,000.

FLOURING MILLS, \$20,000, etc.

500 men are now at work on the new railroad from Athens to the

RICHEST IRON FIELDS IN THE SOUTH.

JUST EAST OF THE TOWN.

Only eight miles from Athens are **VEINS OF RED FOSSILIFEROUS ORE 11½ FEET THICK**, and 4 to 12 miles beyond are **THE LARGEST DEPOSITS OF BROWN ORES IN THE SOUTH**. The ores of both varieties, in addition to being inexhaustible, are both superior in quality to any ores of either variety at present mined in the South. An assertion that can be sustained. Coke can now be obtained at the lowest prices, and in addition a new railroad is now projected to the Cumberland Coal Fields, only 22 miles distant. These roads will give Athens **UNSURPASSED SHIPPING FACILITIES**. The road under construction will penetrate large deposits of Tennessee Variegated Marble; also an Unopened Timbered Region, and will develop the

Largest Colored Slate Deposits in the United States.

These quarries are now being opened, and are pronounced by experts Absolutely Inexhaustible, and equal in quality to the finest Vermont Colored Slate.

The ATHENS MINING & MANUFACTURING CO.

Have alone just contracted for the erection of over

\$500,000 IN NEW MANUFACTURING ENTERPRISES

At Athens, including a 100-ton Blast Furnace, cost \$200,000; Cotton Mills, cost \$150,000; Furniture Works, employing 200 men, cost \$100,000; Hotel, cost \$60,000; Water Works, Street Car Lines, &c. These improvements have been commenced which, added to other improvements projected, will add

\$1,000,000 OF NEW MANUFACTURING ENTERPRISES TO ATHENS.

The company desire to open correspondence with parties desiring to locate, and will extend liberal inducements in addition to gifts of sites in order to induce New Manufacturing Enterprises to locate in Athens. City property is doubling in value every few months, and at present low prices is beyond question a very fine investment.

The Athens Mining & Manufacturing Company,

R. L. BRIGHT, President

R. J. FISHER, Secy. and Genl. Manager.

ROME, GA.

OF all the growing cities in the growing South, Rome presents the greatest opening for money-making investments. With surrounding fields as rich as the lands of Goshen, with exhaustless deposits of brown and red Iron Ores and Manganese immediately at hand on all sides, with mountains of Marble and Limestone coming right up to the city, with an abundance of the best Coal easy of access, areas of untouched forests, and with seven railroad outlets and two navigable rivers, Rome stands, in natural advantages, pre-eminently above any other proud and pretentious city within the limits of this proud and ambitious commonwealth.

THE HEALTH OF ROME IS UNSURPASSED.

*THE UNUSUALLY LOW DEATH RATE IS A PHENOMENON,
STANDING WITHOUT A PEER AT 8.40 PER THOUSAND.*

*NOT ONE CASE OF CATARRH OR CONSUMPTION EXISTS OR
EVER ORIGINATED WITHIN HER LIMITS.*

Rome has 12,000 inhabitants, has invested in colleges and school buildings about \$300,000; in church building over \$100,000; in her new hotel \$125,000; in the dummy line, just completed, over \$50,000. Her manufactories employ 800 hands, with other enterprises now going up. Her system of water-works and sewerage is unsurpassed. The city is lighted with gas, and negotiations for an electric light plant are now pending. The highways leading to the city are all well macadamized. The Post-office Department has recently made Rome a free postal delivery office. The annual business of the city is about \$12,000,000, with the trade constantly increasing. The yearly range of temperature at Rome, between the average highest and lowest, is about 84 degrees; the mean temperature is 60.6 degrees. About seven months intervene between the first and the last killing frosts of the year. There is no better society to be found anywhere.

The Rome Land Company (J. W. Rounsaville, President, T. F. Howell, Treasurer, and J. L. Bass, Secretary and Business Manager) will donate ample grounds to, and otherwise aid, any worthy manufacturing enterprise that may locate here.

Send for circulars and pamphlets.

DECATUR, ALA.

POPULATION.—In March, 1887, 1,200; in July, 1888, 7,000; an increase of over 500 per cent. in sixteen months.

TRANSPORTATION.—Thirty navigable rivers will be accessible by steamers from the wharves after the completion of the government works at Mussel Shoals, on the Tennessee river, in 1889. Two trunk lines of railroad are in operation at Decatur—the Louisville & Nashville, and the East Tennessee, Virginia & Georgia systems; and two more are in course of construction.

MANUFACTORIES.—There are already in operation, or nearly completed, forty manufacturing enterprises that will employ at least 3,500 skilled workmen. These will warrant a population of 20,000 in the near future.

HEALTH STATISTICS.—Death rate last year only 11 per 1,000 among the whites.

IRON.—The best grades of charcoal pig iron can be manufactured here at a cost not to exceed \$11.50 per ton.

COAL.—Coal for manufacturing purposes is now delivered in Decatur, by rail, for \$1.60 per ton. In a few months the mines up the river will deliver coal for about \$1.25 per ton.

TIMBER.—The finest timbers in the world are on the banks of the Tennessee river, adjacent to Decatur. Decatur is one of the largest hard wood producing centers in the South.

SCHOOLS AND CHURCHES.—Good school and church facilities are here already.

FARMING LANDS.—Decatur is the center of one of the finest agricultural regions in the South. The Tennessee valley produces all kinds of small grain, potatoes and fruits, as well as products characteristic of the South, such as cotton, tobacco, etc.

Review of Decatur's Growth up to July, 1888.

The following enterprises have been located in Decatur and New Decatur, Ala., since February 1, 1887, (with few exceptions) and are in full operation, except where otherwise stated:

1. The Decatur Land, Improvement and Furnace Company was organized on the 11th day of January, 1887, and has laid out the town adjoining Decatur, known as New Decatur.
2. The Louisville & Nashville Railroad Company are now (July, 1888), completing their extensive new shops for the manufacture and repair of cars and locomotives; also roundhouses, etc., the whole covering 57 acres. It is estimated that these shops will employ 1,500 men.
3. The United States Rolling Stock Company are moving their extensive car shops from Urbana, Ohio, to Decatur, where they are putting up new works, covering 49 acres, for the manufacture of every description of cars. The machinery will be in place by September, 1888. The company will employ 500 men at first, and eventually 1,000.
4. The Decatur Charcoal & Chemical Works, running 48 ovens of a capacity of 55 cords of wood each, each cord producing two gallons of wood alcohol, 50 bushels of charcoal and 125 pounds of acetate of lime. This plant has a capacity to treat about 50,000 cords of wood per annum.
5. The American Oak Extract Company, the largest plant of the kind in the world, consuming 100 cords of wood daily in the manufacture of tanning extract. The plant is now being increased by one third.
6. A 70-ton Charcoal Iron Furnace, nearly completed and ready for operation, built by Gordon, Strobel & Laurean, of Philadelphia, on the latest improved designs. Cost \$111,000.
7. The Decatur Iron Bridge Construction Company, an immense plant with admirable machinery for building every description of railroad and other iron bridges.
8. The Ivens & Son Machine Company. Building (brick) 280 feet by 100. Manufacture boilers, engines, etc., and do all kinds of foundry work.
9. Cotton Compress (Morse, 90 inch.) built by Steers & Co., of New Orleans. Cost \$75,000, completed. The buildings are of brick and iron with stone foundation and have the largest storage capacity in the South.

10. The Decatur Car Wheel & Manufacturing Company. Capacity, 100 wheels per day at present; will be increased as fast as possible, as the company cannot now supply their orders.

11. Southern Horseshoe Nail Factory. These extensive works are being constructed, and will shortly be in operation.

12. Decatur Waterworks (both direct pressure and Holly system) now being constructed by Howland & Ellis, of Boston, Mass. There will be 38 miles of pipe, of which over one-half are laid already. The water will be turned on about September next, and Decatur will have an unrivaled water supply.

13. Moulthrop & Stevens' mammoth brick yard, occupying over 7 acres and employing 50 men, their steam machinery having a capacity of 75,000 brick per day. There are five other brick yards in Decatur, and brick can be furnished at the present time at from \$5 to \$6 per thousand.

14. H. S. Freeman's lumber mills and lumber yard. Daily capacity of mill 15,000 feet. Handles 2,500,000 shingles yearly, besides laths.

15. Arantz Brothers' saw mills and lumber yards. Operate 3 band-saws. Daily capacity of their mills 60,000 feet.

16. Decatur Lumber Company's saw mill, planing mill and dryer. A very large establishment.

17. Berthard & Company's sash, door and blind factory.

18. The Hoosier Mills & Building Company.

19. The Southern Lumber Company. Make sash, doors and blinds.

20. J. D. Jervis & Company's extensive factory for sash, doors, blinds, stairs and hardwood finish.

21. Decatur Builders' Supply Company's lumber yards and planing mills.

22. Decatur Artificial Ice Company; capacity 6 tons daily, to be increased shortly to 15 tons.

23. Decatur Cornice & Roofing Company; manufacture galvanized iron cornices and iron and tin roofing.

24. The Decatur Street Railway, running cars over 3½ miles of track. Will have 2½ miles more completed shortly. Is equipped with new rolling stock.

25. The Decatur Telephone Company, operating over 80 stations.

26. The Decatur Electric Light Co., running 30 arc lights (Brush system).

27. Grant & Company's furniture factory.

28. Decatur Building Association.

29. Buehler's Bottling Works.

30. Decatur Printing Company.

31. Artificial Stone Works.

32. Decatur Plumbing & Supply Company.

33. Alabama Lumber & Fruit Package Company.

34. Decatur Carriage Company.

35. First National Bank. Paid up capital \$100,000.

36. Exchange Bank of Decatur. Capital \$100,000.

37. One daily and two weekly papers.

38. The new "Tavern" Hotel, in full operation, owned by the Decatur Land Improvement & Furnace Company, delightfully situated on their own grounds, magnificently furnished by the Robert Mitchell Furniture Company of Cincinnati, Ohio, with room accommodations for at least 125 guests. There are five other hotels in Decatur.

39. The Decatur Land, Improvement & Furnace Company's incandescent electric plant, furnishing lights to the "Tavern," also to stores, offices and private dwellings.

A block to contain an opera-house, stores and offices, is now being built by a joint stock company at a cost of \$60,000.

The Louisville & Nashville Railroad Company handle daily in their depot yards 640 cars, 360 going South and 280 North; employ 85 men, and pay out to employees \$6,000 monthly.

The East Tennessee, Virginia & Georgia Railway Company handle in their yards 150 to 200 cars, employ 14 men, and pay out in wages \$720 per month.

In March, 1887, the number of inhabitants in Decatur was 1,200; in March, 1888, 7,000 in Decatur and New Decatur. Since January, 1888, there have been over two hundred houses erected; many of them are substantial brick business houses.

The Decatur Land, Improvement & Furnace Company is offering most favorable terms to parties who will purchase lots for the purpose of building homes.

The capital stock of the company, by retirement of the treasury stock, is reduced to 50,000 shares, or \$5,000,000, of which 45,659½ shares have been issued and are now outstanding. It is largely held as an investment by small holders scattered through different States, very many of whom have also bought property in Decatur, and by persons engaged in business and various occupations in Decatur.

The strong financial condition of the company can best be appreciated by a perusal of its published statements of July 1st, 1888, a copy of which can be obtained from the secretary at New Decatur, Alabama.

For Maps, Illustrated Pamphlets, and Specific Information, address

The Decatur Land, Improvement & Furnace Company

NEW DECATUR, ALA.

The Deane Pumping Machinery.

For the various classes of pumping service, such as that for mills, manufactories, mines, irrigation, general water supply, etc., an almost infinite variety of designs and proportions, to meet the special conditions of each, is necessary. In the accompanying cuts are shown simply a few examples out of this number, as built by the Deane Steam Pump Co., Holyoke, Mass.

For boiler feeding and for pumping against heavy pressure in many other situations, the direct acting horizontal pump shown in the annexed cut is especially adapted. It is very compact, so that it can be located in space otherwise unavailable, and from the extreme simplicity of

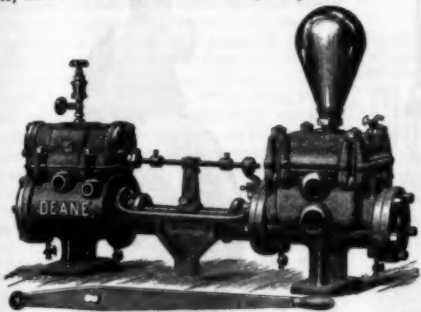


FIG. 1.—DEANE STEAM PUMP.



FIG. 2.—DEANE ARTESIAN ENGINE.

its construction requires very little attention.

When the situation requires it, vertical machines and other special features of construction can be supplied. The Duplex style of pumps, for all duties for which they are adapted, are also manufactured.

In many places where water is required the source of supply is below the reach of ordinary close connected pumps. In this case a vertical engine at the surface of the ground and a pump cylinder, placed near the water, is employed. For artesian wells, where the pump must be examined from the surface, the style of engine shown herewith is invaluable. It permits the instant swinging aside of the steam cylinder to give access to the well without disconnecting any of the piping.

In addition to the pumps arranged to be driven by steam, there is a frequent demand for geared pumps, one style of which is shown in the next cut. These machines are used for water works service and for many other duties, and can be arranged to be driven by belt or directly from the shafting.

There is also a constant demand for steam pumps of considerable size for use in water works service. One of these pumping engines, of the duplex com-

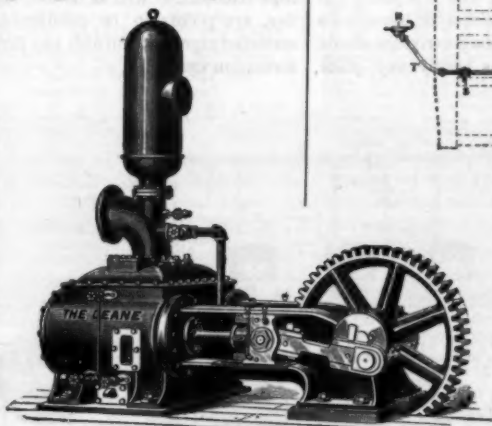


FIG. 3.—DEANE DUPLEX POWER PUMP.

pound condensing pattern, is shown in the last illustration. The cheapness and durability of this class of engines, the small space occupied and ease of management, combined with the economical performance, are some of their claims to favorable notice.

Deane engines are in use, or in construc-

tion, for the water works of Norfolk and Staunton, Va.; Clarksburg and Charleston, W. Va.; Chestertown, Md.; Durham, N. C.; Columbia, Bolivar and Chattanooga, Tenn.; Anniston, Decatur, Gadsden, Montgomery and Birmingham, Ala., and many other Southern cities.

To accommodate their increasing trade at the South the Deane Steam Pump Co. has established an office and warerooms at Birmingham, Ala., as mentioned elsewhere in this issue.

A Baltimore Car-Brake Enterprise.

A company was organized in this city in 1887, under the title of the Boyden Power Brake Co., for the manufacture of brake equipment for railway trains locomotives and tenders. This brake has been in course of trial and development for over

owing, it is said, to inherent defects in the system.

One of the chief defects in air-brakes is the tendency of the compressed air to escape at the very time it is relied on to do its work. In the Boyden brake an automatic spring device applies the brake, while compressed air is used merely to release and control it. This spring device furnishes for each car an independent brake power, positive in its action. It is so arranged that if any of the parts pertaining

will not justify so expensive a brake as the air-brake heretofore used.

The Boyden brake can be furnished for \$30 per freight car, which is about half the cost of the cheapest air-brake now on the market.

The Boyden Co. will give their attention for the most part to equipping freight cars, and are now prepared to contract

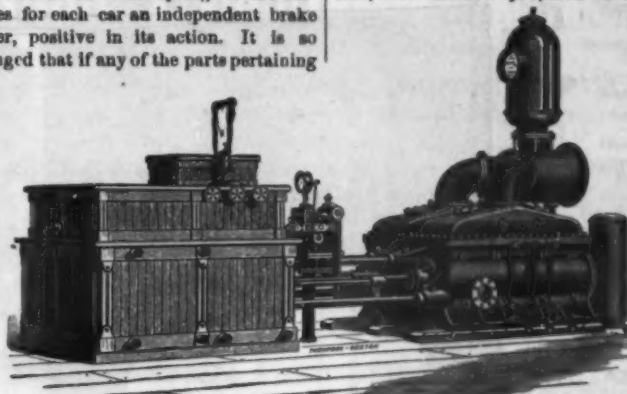


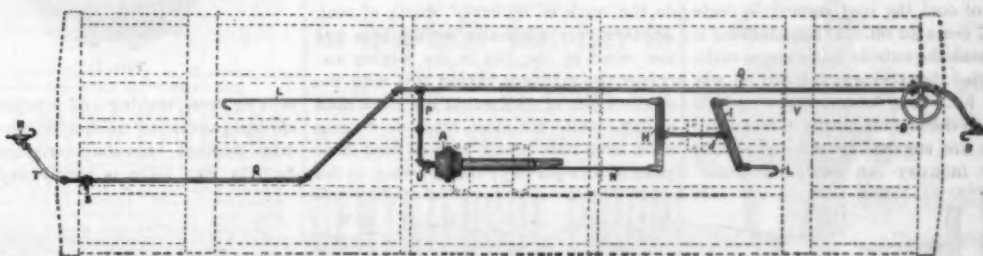
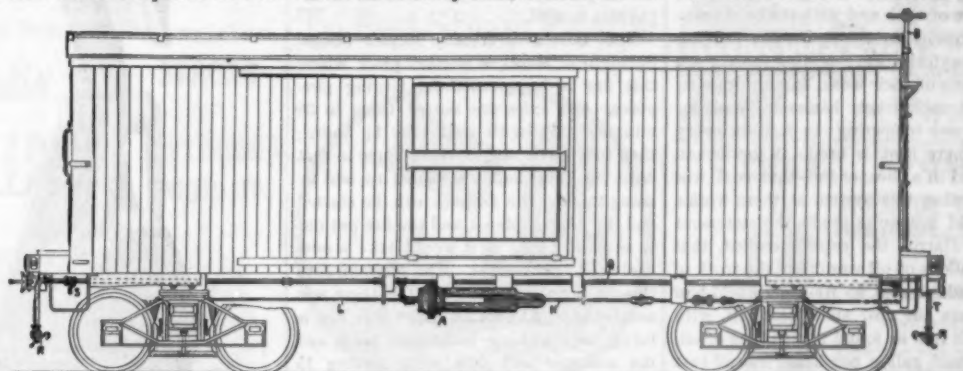
FIG. 4.—DEANE PUMPING ENGINE.

to the air, at any portion of the train, should permit compressed air to escape, the brakes will thereby be applied on all the cars and stop the train, and the trainmen thus notified that a defect has occurred. This action, when a defect occurs, has a great advantage in point of safety over the air brake, where a defect would be discovered only at the critical moment—when the engineer endeavors to apply the brake.

The Boyden brake possesses all the advantages of both the "automatic" and the direct air-brake systems, without the de-

with railroad companies for the equipment of passenger or freight cars, and can guarantee economies amounting to many thousands of dollars annually to railways adopting this brake.

The company has heretofore had their brakes made under contract by several machine shops of this city, but they will shortly erect works here in Baltimore, and probably in Chicago, fitted with special machinery for manufacturing the brake, and expect to give employment to a large number of workmen. Recent trials made on the Baltimore & Ohio Railroad have



THE BOYDEN CAR BRAKE.

fects of either, and costs much less.

Cars equipped with the Boyden brake and cars equipped with the Westinghouse automatic brake may be coupled up in the same train, and both brakes will operate together; also locomotive having the Boyden equipment will operate the Westinghouse car-brakes.

The company's patents have been favorably passed upon by the Eastern Railway Association, and are guaranteed free of infringement.

There are 28,000 passenger cars and 950,000 freight cars in constant use in the United States. The proportion is one passenger car to thirty four freight cars. Very few freight cars have power brakes; nearly all still use the same hand brake that has been in use for thirty years. This is owing to the fact that the freight traffic

given entire satisfaction. The advertisement in this issue gives some additional facts of interest regarding this brake.

The company's illustrated catalogue fully explains the brake and its mode of operation. Some of Baltimore's most successful and enterprising business men are stockholders in this company, among them being Douglas H. Thomas, B. N. Baker, George B. Baker, John K. Ober, Henry Robinson, Dr. Wm. Whitridge, E. H. Thomson, Theodore G. Lurman and Skipwith Wilmer.

The president of the company, Mr. Geo. A. Boyden, is a mechanical engineer and an expert in brake matters. The company's office is in the Firemen's Building.

Subscribe to the MANUFACTURERS' RECORD. Price \$4.00 a year, or six months for \$2.00.

Crude Petroleum for Forges.

A new system of burning crude petroleum in common forges is in operation at the works of the Ashtabula Tool Co., Ashtabula, Ohio. It is the process owned by the Aerated Fuel Co., Springfield, Mass., and patented by J. H. Bullard, of

the power starts). There is no stopping to replenish the fires as with coal, the heat is constant, and all the men have to do is to hammer away from morning until night; the air is clear and free from smoke and the disagreeable odor of anthracite coal, while the shop is much cooler, as there is not as much waste heat as with

welding chain. Some beautiful samples of this work are shown in the company's office, welded without any flux whatever, thus showing what a very clean fire can be produced. They are also welding shanks onto shovel blades, wagon skeins, melting type metal for type machines, tinning kettles for tinning malleable iron,

clean and comfortable as it is possible to have such a place. Fig. 1 of the accompanying illustrations shows a furnace for heating large bars for drop forging, etc., and Fig. 2 a side of Upson Nut Co's plant at Cleveland, Ohio, where this fuel is used.

Improved Snatch Blocks.

The Cleveland Block Co., of Cleveland, Ohio, are now manufacturing an improved



FIG. 1.—FURNACE FOR HEATING LARGE BARS FOR DROP FORGING, ETC.

that city, and consists simply of oil and air in the proper proportions to obtain complete combustion. At this mill they are using it in all their forges to the entire exclusion of coal and with the most satisfactory results in brazing ferules for handles of hayforks, etc., welding shanks and other parts of their work, and for drawing the steel under their hammers, and for heating and tempering; in fact, in every place where heat is used. A gentleman interested in a cheaper fuel than coal was investigating this system at these works, and could not quite credit the statement of Mr. Harris, the superintendent, that seven gallons of oil was doing the work of 200 pounds of coal, so Mr. Harris told him to measure the coal and oil himself, with the result that he found five gallons of oil, or one-half gallon per hour, was all that was used to take the place of the above amount of coal, the coal costing 50 cents against 7 cents for oil. At this showing it did not take the outside man long to make up his mind that that was the fire he was looking for. The enormous saving this must be to the manufacturers in this country who are engaged in this and similar lines of industry can easily be under

stood. Unless a man owns his gas wells it is said to be cheaper than natural gas, having all its advantages and none of its disadvantages. This oil system is as independent as anything can possibly be, and wherever it has been used no increased rates of insurance have been demanded. The workmen get to work sooner in the morning (from seven to ten minutes after

coal, the fire being directed just where it is needed. The workmen earn more, and the steel is said to be of better quality than is possible where coal with all its impurities is used. The Boston & Albany Repair Shops, Springfield, Mass., is another place where this fire is being used for forging purposes. Car axles are heated there in 35 minutes that with coal take 1½ hours; then they have jobs of work come in that must be immediately attended to, and by using this fire the furnace can be started and the job completed, and the fire put out in as short a time as it would take a new coal fire to get started. The foreman says this is a great point gained if there was none other. At another place this fire is being used making horse-shoe nails, and the manager said they were making 15 cents' worth of oil, at 3½ cents per gallon, do the work of 50 cents' worth of coal. Another very noticeable saving here was the wear of the dies in the forging machines, the manager saying that with the oil fire a pair of dies would last more than a day, while the same machine forging nails from rods heated by coal used three pairs of dies per day; this is owing to the



FIG. 1.

melting brass, making and tempering car springs, annealing muffles in brass mills drop forgings, annealing cartridge shells, &c.; in fact, there is hardly any place,



FIG. 2.

snatch block, which is shown in the cuts on this page.

The strap to which swivel hook is attached slides on the pin by means of a slot, as shown in the smaller cut, thus giving the block when in use the strength of a full



FIG. 3.

bolted tackle block with bearings on the steel pin close to the sheave. The ease with which it can be unfastened and the rope removed, as well as its staying qualities, are points to be mentioned. The manufacturers will furnish any further information desired.

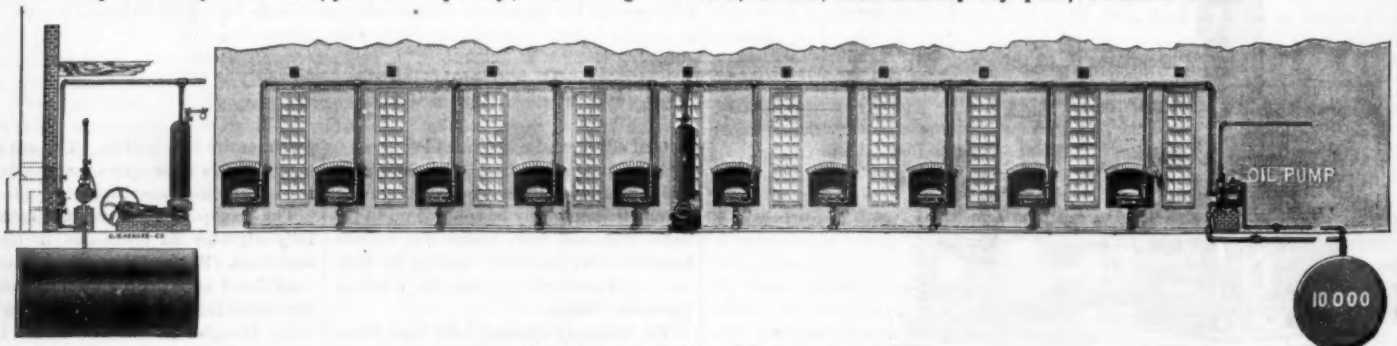


FIG. 2.—SIDE OF A PLANT AT CLEVELAND, OHIO.

stood. Unless a man owns his gas wells it is said to be cheaper than natural gas, having all its advantages and none of its disadvantages. This oil system is as independent as anything can possibly be, and wherever it has been used no increased rates of insurance have been demanded. The workmen get to work sooner in the morning (from seven to ten minutes after

iron being softer and freer from the hard scale caused by the anthracite coal. The manager also said there was a saving of 20 per cent. in labor, as there were no fires to replenish or wait for, no ashes to take away; in fact, nothing to prevent the men from giving their whole attention to their machines.

This system of heat is now used for

where heat is required that this system is not adapted to.

It is very interesting to see this process in operation and to visit mills where there are no unsightly heaps of ashes or bins of coal, but instead find a clean floor; no shields up or necessary to keep the heat off the men, but the air comparatively cool; no smoke, no odor, but everything as

The Deane Steam Pump Co. has recently opened an office and warerooms for the sale of pumping machinery at Birmingham, Ala. The rooms are centrally located, at 6 S. Twentieth street, and a full stock of pumps for all classes of service will be constantly on hand. The manager, Mr. F. H. Hayes, is conversant with the business and a practical engineer of experience, so that all calls and inquiries will have the best attention.

A Trip South,

Whether for health or pleasure in the beautiful mountain region of Kentucky and Tennessee, on business bent, or with a purpose of investigating the wonderful progress and increasing wealth of the country, cannot be more conveniently or cheaply made than in the elegantly appointed and fast-scheduled trains of the Queen & Crescent Route (Cincinnati Southern and associate roads), which leave Cincinnati twice daily for Chattanooga, New Orleans, and points Southeast and Southwest. H. Colbran, general passenger agent, Cincinnati, will afford all information needed.

Among the Northern Lakes

of Wisconsin, Minnesota, Iowa, Missouri and Dakota are hundreds of delightful places where one can pass the summer months in quiet rest and enjoyment, and return home at the end of the heated term completely rejuvenated. Each recurring season brings to Oconomowoc, Waukesha, Beaver Dam, Frontenac, Okoboji, Hotel St. Louis, Lake Minnetonka, White Bear, Excelsior Springs, and innumerable other charming localities with romantic names, thousands of our best people whose winter homes are on either side of Mason and Dixon's line. Elegance and comfort at a moderate cost can be readily obtained. A list of summer homes with all necessary information pertaining thereto is being distributed by the CHICAGO, MILWAUKEE & ST. PAUL RAILWAY, and will be sent free upon application by letter to A. V. H. Carpenter, General Passenger Agent, Milwaukee, Wis.

CHEAP FARMING LANDS SOUTH

It is a recognized fact that the cheapest farming lands in America to day are in the South, and men of much or moderate means looking for real estate investments, or permanent homes, should not fail to visit the following points, where so many northern people are now settling, viz: Jackson, Tennessee; Aberdeen and Jackson, Mississippi; Hammond, Crowley, Jennings, Welsh and Lake Charles, Louisiana. Round-trip tourist tickets, limited to June 1st, 1888, with stop over privileges south of Cairo, Illinois, are on sale to New Orleans, Jennings and Lake Charles. For rates apply to nearest ticket agent, and be sure your tickets read via the Illinois Central Railroad from Chicago or St. Louis. For pamphlet entitled "Southern Home-Seeker's Guide," and circulars concerning the above named points, address the undersigned, at Manchester, Iowa.

J. F. MERRY.

Gen. West. Pass. Agt.

TO MACKINAC

Summer Tours.

PALACE STEAMERS. LOW RATES

Four Trips per Week Between

DETROIT, MACKINAC ISLAND

St. Ignace, Cheboygan, Alpena, Harrisville, Oscoda, Sand Beach, Fort Huron, St. Clair, Oakland House, Marine City.

Every Week Day Between

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Special Sunday Trips during July and August.

OUR ILLUSTRATED PAMPHLETS

Rates and Excursion Tickets will be furnished by your Ticket Agent, or address

E. B. WHITCOMB, Genl. Pass. Agent,

Detroit & Cleveland Steam Navigation Co.

DETROIT, MICH.

HENLEY'S

Power Boring, Drilling & Screw Driving Machine.

Perfectly adjustable. Can be worked at any angle and over any space desired. Is stopped and started instantly. Is perfectly balanced, and as easily handled as a common brace. Specially adapted for Wagon, Carriage, Coffin, Buggy Body, Sash, Agricultural, and in fact all Manufacturing establishments where boring or drilling holes, driving screws or screwing on small nuts is to be done. Send for Circular and Prices to H. C. HENLEY, RICHMOND, IND., U.S.A.

Creamery and Dairy Machinery AND SUPPLIES.

Outfits and Machinery for Cheese Factories.

Write for Illustrated Catalogue.

JOHN S. CARTER, Syracuse, N. Y.

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W. H. GOLDSMITH, SOLE AGENT, FALL RIVER, MASS.

The only successful machine in the world for picking threads out of spinners' waste.

THE Sigourney Tool Co. HARTFORD, CONN.



One, Two and Three Sensitive, STRONG -AND- Workmanship UNEQUALLED. Spindle DRILLS.



Special Machinery, Tools, Models, &c. Built by Day or Contract.

TO ADVERTISERS!

For a check for \$20 we will print ten-line advertisement in One Million issues of leading American Newspapers and complete the work within ten days. This is at the rate of only one-fifth of a cent a line, for 1,000 Circulation! The advertisement will appear in but a single issue of any paper, and consequently will be placed before One Million different newspaper purchasers; or 250 MILLION READERS, if it is true, as is sometimes stated, that every newspaper is looked at by five persons on an average. Ten lines will accommodate about 75 words. Address with copy of Advt. and check, or send 20 cents for Book of 250 pages, GEO. P. HOWELL & CO., 108 NASSAU ST., NEW YORK.

We have just issued a new edition of our Book called "Newspaper Advertising." It has 364 pages, and among its contents may be named the following Lists and Catalogues of Newspapers: DAILY NEWSPAPERS IN NEW YORK CITY, with their Advertising Rates.

DAILY NEWSPAPERS IN CITIES HAVING more than 100,000 population, omitting all but the best. DAILY NEWSPAPERS IN CITIES HAVING more than 20,000 population, omitting all but the best. A SMALL LIST OF NEWSPAPERS IN which to advertise every section of the country: being a choice selection made up with great care, guided by long experience.

ONE NEWSPAPER IN A STATE. The best one for an advertiser to use if he will use but one. BARGAINS IN ADVERTISING IN DAILY Newspapers in many principal cities and towns, a List which offers peculiar inducements to some advertisers.

LARGEST CIRCULATIONS. A complete list of all American papers issuing regularly more than 2,000 copies.

THE BEST LIST OF LOCAL NEWSPAPERS, covering every town of over 1,000 population and every important county seat.

SELECT LIST OF LOCAL NEWSPAPERS, in which advertisements are inserted at half price. 642 VILLAGE NEWSPAPERS, in which advertisements are inserted at half price. \$2.15 a line and appear in the whole lot—one-half of all the American Weeklies. Book sent to any address for FIFTY CENTS.

Rome Foundry & Machine Works,

ROME, GA.

Manufacturers of the well known

DAVIS DOUBLE TURBINE

Water Wheel

Beyond all question one of the best wheels on the market, and is fully guaranteed.



ALSO MANUFACTURE

Portable & Stationary Engines

AND BOILERS,

Grist & Flouring Mill Machinery.

Send for Illustrated Catalogue and Price List.

COMPLETE STEAM PUMP ONLY SEVEN DOLLARS

DEMAND THIS PUMP OF YOUR DEALER OR WRITE TO US FOR PRICES

VANDUZEN'S PATENT

VANDUZEN & TIFT.

SOLE MAKERS CINCINNATI.

The Best Steam Pumps FOR EVERY SERVICE.

MANUFACTURED BY

The Hooker-Colville Steam Pump Co.

1101 N. 2d STREET,

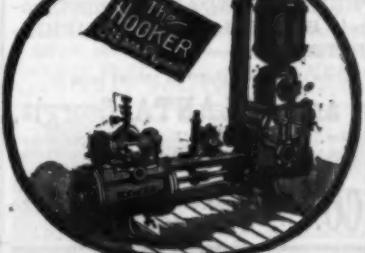
ST. LOUIS, MO.

Send for Catalogue.

If you want the BEST, MOST EFFICIENT and DURABLE

CENTRIFUGAL PUMP

IN THE MARKET, REMEMBER THAT THE Original Baldwinville Centrifugal Pumps ARE MANUFACTURED ONLY BY BOGGS & CLARKE, - SYRACUSE N. Y. Write for Catalogue and Prices.



MANUFACTURED BY

The Hooker-Colville Steam Pump Co.

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ST. LOUIS, MO.

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CENTRIFUGAL PUMP

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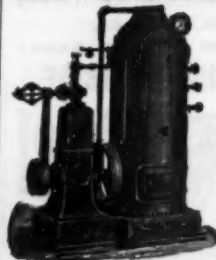
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TRADE NOTES.

THE Mason Regulator Co., of Boston, have recently received an order for 100 reducing valves from the Martin Car Heating Co.; also for a large number of pump pressure regulators from the Whittier Machine Co. for their elevator plants.

THE Brown & Sharpe Manufacturing Co., of Providence, R. I., are now putting in another battery of Harrison safety boilers of 275 horse-power capacity. They have used this type of boiler since 1871, since which time they have given four orders, aggregating nine boilers of 665 horse-power.

THE Empire Wringer Co., Auburn, N. Y., under date of August 27th, write: "Our factory has been closed 10 days for repairs, and we are just starting up again with an increase in our machinery and in our force of workmen. Our trade thus far this year shows an increase of 25 per cent. over last."

THE Aetna Machine Co., of Warren, Ohio, has just shipped two of Messrs. Alex. McLaughlin & Co's gas producers and furnaces to the Kelly Nail & Iron Co., of Ironton, Ohio. This is the second set of double furnaces that have been forwarded to that city recently, the other having been furnished for the Belfont Iron Works Co.

RADCLIFF, ROWE & Co., saw and knife manufacturers, of Cincinnati, Ohio, report their business thriving, especially in the South and among mills of large capacity. Their new mode of tempering is one of the great achievements of modern time. By this process saws will stand any kind of spread without splitting or crumbling. From the amount of orders they are receiving, we predict for them a brilliant future.

THE hotels at Lake Chautauqua have decided to remain open during the month of September to accommodate the growing patronage of this beautiful and popular resort. September is one of the best months in which to visit Chautauqua. Good hotels, fishing and boating. High altitude and pure, dry air. Write for descriptive pamphlet to W. C. Rineason, assistant general passenger agent, Cleveland, Ohio.

THE Ball Engine Co., of Erie, Pa., manufacturers of high-speed automatic cut-off engines, are having an unprecedented demand for engines, and are running night and day to keep up with their orders. To show the fame of this engine, we learn that they have recently made shipments to Mexico, Australia, Japan and England, and are putting their engines in a number of the largest and most complete electric light plants of this country.

J. D. SMITH & Co., Cincinnati, O., (successors to Fitzmorris & Smith Co.) have just issued their eighth annual catalogue and price-list. This firm are inventors and manufacturers of a full line of foundry facings and blackings, plumbagoes and black leads, and dealers in all kinds of foundry supplies and molders' tools, all of which are illustrated and described. Many facts and suggestions are also given of special interest to foundry men which should make this catalogue valuable.

THE Charles Munson Belting Co., Chicago, Ill., present to the trade a catalogue descriptive of their specialties. Embraced in that catalogue we find a full price-list of rubber belting, rubber hose, steam hose, round leather belting (twisted and solid), round steel belt couplings, rubber cement, solid wove cotton belt, Blake's patent belt studs, pointed belt hooks, &c. They also submit numerous testimonials as to the superior workmanship and wearing qualities of the Eagle brand of belting.

MESSRS. CURTIS & CURTIS, of Bridgeport, Conn., manufacturers of the Forbes patent die stock, pipe cutting and threading machinery, are still running over time in their new works. Their July shipments were the largest of any month since they have been in business, but they overran even this during August, when the shipments exceeded July by over \$500. They are particularly busy filling orders for their power pipe machines, among which we noticed orders from South Africa, Texas, Montana and San Francisco.

AMONG recent shipments the Buffalo Forge Co. have sent a complete equipment of Smith's forges, steel pressure blowers and ventilating fans on their contract with the Vanderbilt University, of Nashville, Tenn., and similar plants to the Miller Manual Training School, Crozet, Va.; the University of Tennessee, Knoxville; the Georgia State School of Technology, and Cornell University, Ithaca, N. Y. In addition to their extended line they make a specialty of complete plants of this kind for technical educational institutions.

S. R. WHITE & BRO., Norfolk, Va., have issued an illustrated folder in which is illustrated and described the Stonewall cotton gin. This gin has been before the public for a number of years, and because of its superior construction has become a general favorite with the Southern farmer. The sales of this gin have been very large, and the constantly increasing demand is conclusive proof of its real merits. It is built exclusively for horse-power and steam use, and for speed, durability and fine work it is claimed has no equal. Send for prices and description.

THOMPSON'S BROMINE & ARSENIC SPRINGS Co., Saltville, Va., in a recent letter write: "We sold 9,700 cases of water last year, and shall have 22,000 cases hauled to the railroad this season. We look forward to an early day when we shall be obliged to bottle the entire flow of the spring, as the demand is increasing very rapidly."

CHAS. A. SCHIEREN & Co., of New York, report recent sales of their leather link belting to the following: Rome Iron Works, Rome, N. Y.; Waters & Garland, Louisville, Ky.; Stearns Manufacturing Co., Erie, Pa.; W. P. Orr Linseed Oil Co., Piqua, Ohio; Texas Standard Cotton Oil Co., Galveston, Texas; Southern Cotton Oil Co., Houston, Texas; Lackawanna Iron & Coal Co., Scranton, Pa.; Lehigh & Wilkesbarre Coal Co., Rudenried, Pa.; Goodyear Rubber Co., Milwaukee, Wis.; Nordyke & Marmon Co., Indianapolis Ind.; Smith & Courtney, Richmond, Va.

THE attention of the trade is called to the catalogue of Haines, Jones & Cadbury, of Philadelphia, Pa., manufacturers of plumbers' and sanitary supplies. Fully illustrated and described in this work are patent wash-out closets of various designs and finish, "Newell's" patent cistern valves, cabinet finished cisterns, patent perfection flush pipes, hardwood seats, "Perfection and Newell" basins, open lavatories, enamelled iron bath tubs, &c. The catalogue also contains two handsome illustrations of sample bath rooms. As prices and many pertinent facts are given, architects and plumbers should send for a copy.

THE Gleason Boiler Compound Co., Cleveland, Ohio, are having a large demand for the Continental boiler scale preventive, which they manufacture. The following is claimed for it: "The Continental boiler scale preventive acts chemically, making hard water soft, decomposing the lime, etc., and so changing it that scale cannot form, and by a proper use of the preventive the boilers can be kept free from scale. It also protects the boilers from the action of the soluble impurities of the water, which often seriously injure them by corrosion. It con-

tains no acid or anything that can injure a boiler, but will preserve iron or steel any length of time, so that no possible injury can accrue from its use. It slowly decomposes old scale, softening it and changing it into mud, which is easily removed or washed out the same as other dirt."

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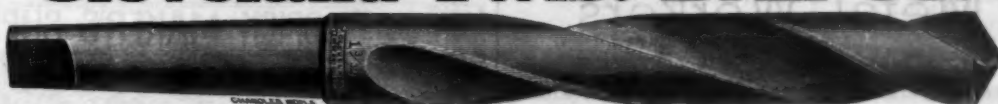
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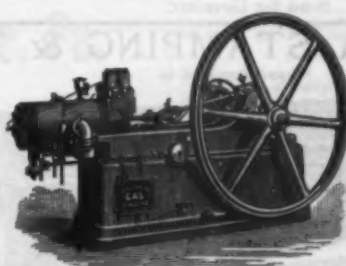
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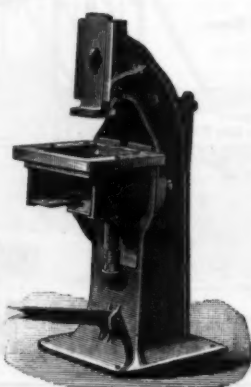
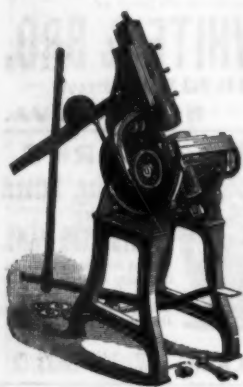
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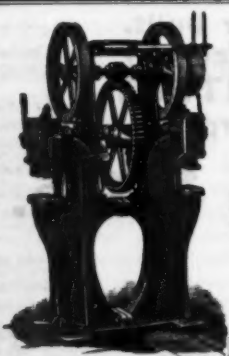
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AUGERS AND BITS.
 Conn. Valley Mfg. Co..... extra, 60x120 5
 Douglas Mfg. Co..... No. 1, 60x120 5
 Iron..... dis 55x120 5
 Cook's Douglas Mfg. Co..... dis 55x120 5
 Universal..... dis 55x120 5
 Patent Solid Head..... dis 55x120 5
 Russell Jennings' Auger, Dowell, Machine..... dis 55x120 5
 Dwyer and Hand Rail Bits..... dis 55x120 5
 Iron "Jennings" Bits..... dis 55x120 5
 Expansive Bits, Clark's small, 5 1/2; large,..... dis 55x120 5

Expansive Bits, Ives'..... dis 55x120 5
 Expansive Bits, Blake's..... dis 55x120 5
 Hollow Augers, Ives'..... dis 55x120 5
 Hollow Augers, Douglas..... dis 55x120 5
 Hel. Aug., Bonney's Adjust., 1/2 doz 5 1/2, dis 55x120 5
 Hel. Aug., Stearns' Adjust., 1/2 doz 5 1/2, dis 55x120 5
 Hel. Aug., Ives' Expansive, each 5 1/2, dis 55x120 5
 Hel. Aug., Universal Expansive, each 5 1/2, dis 55x120 5
 Wood's..... dis 55x120 5
 Gimlet Bits, Diamond..... dis 55x120 5
 Double Cut Gimlet Bits, Shephardson's..... dis 55x120 5
 Double Cut Gimlet Bits, Douglas..... dis 55x120 5
 Double Cut Gimlet Bits, Ives'..... dis 55x120 5
 Morse's Bit Stock Drill..... dis 55x120 5
 L'Hommedieu's Ship Auger..... dis 55x120 5

AWL SAVERS.
 Sewing Brass Ferrule..... \$ 2.00 gross—dis 40x120 5
 Patent Sewing, Short..... \$ 2.00 gross—dis 40x120 5
 Patent Sewing, Long..... \$ 2.00 gross—dis 40x120 5
 Patent Peg, Plain Top..... \$ 2.00 gross—dis 40x120 5
 Patent Peg, Leather Top..... \$ 2.00 gross—dis 40x120 5

AWLS, BRAD SETS, ETC.
 Awl, Sewing, Common..... \$ 1.70 gross—dis 35x120 5
 Awl, Shouldered Peg..... \$ 1.45 gross—dis 35x120 5
 Awl, Patent Peg..... \$ 1.45 gross—dis 35x120 5
 Awl, Shouldered Brad, 1/2 gross 5 1/2, dis 35x120 5
 Awl, Handled Brad..... \$ 1.50 gross—dis 35x120 5
 Brad Sets, Allen's..... \$ 1.50 gross—dis 35x120 5
 Brad Sets, No. 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000, 1005, 1010, 1015, 1020, 1025, 1030, 1035, 1040, 1045, 1050, 1055, 1060, 1065, 1070, 1075, 1080, 1085, 1090, 1095, 1100, 1105, 1110, 1115, 1120, 1125, 1130, 1135, 1140, 1145, 1150, 1155, 1160, 1165, 1170, 1175, 1180, 1185, 1190, 1195, 1200, 1205, 1210, 1215, 1220, 1225, 1230, 1235, 1240, 1245, 1250, 1255, 1260, 1265, 1270, 1275, 1280, 1285, 1290, 1295, 1300, 1305, 1310, 1315, 1320, 1325, 1330, 1335, 1340, 1345, 1350, 1355, 1360, 1365, 1370, 1375, 1380, 1385, 1390, 1395, 1400, 1405, 1410, 1415, 1420, 1425, 1430, 1435, 1440, 1445, 1450, 1455, 1460, 1465, 1470, 1475, 1480, 1485, 1490, 1495, 1500, 1505, 1510, 1515, 1520, 1525, 1530, 1535, 1540, 1545, 1550, 1555, 1560, 1565, 1570, 1575, 1580, 1585, 1590, 1595, 1600, 1605, 1610, 1615, 1620, 1625, 1630, 1635, 1640, 1645, 1650, 1655, 1660, 1665, 1670, 1675, 1680, 1685, 1690, 1695, 1700, 1705, 1710, 1715, 1720, 1725, 1730, 1735, 1740, 1745, 1750, 1755, 1760, 1765, 1770, 1775, 1780, 1785, 1790, 1795, 1800, 1805, 1810, 1815, 1820, 1825, 1830, 1835, 1840, 1845, 1850, 1855, 1860, 1865, 1870, 1875, 1880, 1885, 1890, 1895, 1900, 1905, 1910, 1915, 1920, 1925, 1930, 1935, 1940, 1945, 1950, 1955, 1960, 1965, 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, 2015, 2020, 2025, 2030, 2035, 2040, 2045, 2050, 2055, 2060, 2065, 2070, 2075, 2080, 2085, 2090, 2095, 2100, 2105, 2110, 2115, 2120, 2125, 2130, 2135, 2140, 2145, 2150, 2155, 2160, 2165, 2170, 2175, 2180, 2185, 2190, 2195, 2200, 2205, 2210, 2215, 2220, 2225, 2230, 2235, 2240, 2245, 2250, 2255, 2260, 2265, 2270, 2275, 2280, 2285, 2290, 2295, 2300, 2305, 2310, 2315, 2320, 2325, 2330, 2335, 2340, 2345, 2350, 2355, 2360, 2365, 2370, 2375, 2380, 2385, 2390, 2395, 2400, 2405, 2410, 2415, 2420, 2425, 2430, 2435, 2440, 2445, 2450, 2455, 2460, 2465, 2470, 2475, 2480, 2485, 2490, 2495, 2500, 2505, 2510, 2515, 2520, 2525, 2530, 2535, 2540, 2545, 2550, 2555, 2560, 2565, 2570, 2575, 2580, 2585, 2590, 2595, 2600, 2605, 2610, 2615, 2620, 2625, 2630, 2635, 2640, 2645, 2650, 2655, 2660, 2665, 2670, 2675, 2680, 2685, 2690, 2695, 2700, 2705, 2710, 2715, 2720, 2725, 2730, 2735, 2740, 2745, 2750, 2755, 2760, 2765, 2770, 2775, 2780, 2785, 2790, 2795, 2800, 2805, 2810, 2815, 2820, 2825, 2830, 2835, 2840, 2845, 2850, 2855, 2860, 2865, 2870, 2875, 2880, 2885, 2890, 2895, 2900, 2905, 2910, 2915, 2920, 2925, 2930, 2935, 2940, 2945, 2950, 2955, 2960, 2965, 2970, 2975, 2980, 2985, 2990, 2995, 3000, 3005, 3010, 3015, 3020, 3025, 3030, 3035, 3040, 3045, 3050, 3055, 3060, 3065, 3070, 3075, 3080, 3085, 3090, 3095, 3100, 3105, 3110, 3115, 3120, 3125, 3130, 3135, 3140, 3145, 3150, 3155, 3160, 3165, 3170, 3175, 3180, 3185, 3190, 3195, 3200, 3205, 3210, 3215, 3220, 3225, 3230, 3235, 3240, 3245, 3250, 3255, 3260, 3265, 3270, 3275, 3280, 3285, 3290, 3295, 3300, 3305, 3310, 3315, 3320, 3325, 3330, 3335, 3340, 3345, 3350, 3355, 3360, 3365, 3370, 3375, 3380, 3385, 3390, 3395, 3400, 3405, 3410, 3415, 3420, 3425, 3430, 3435, 3440, 3445, 3450, 3455, 3460, 3465, 3470, 3475, 3480, 3485, 3490, 3495, 3500, 3505, 3510, 3515, 3520, 3525, 3530, 3535, 3540, 3545, 3550, 3555, 3560, 3565, 3570, 3575, 3580, 3585, 3590, 3595, 3600, 3605, 3610, 3615, 3620, 3625, 3630, 3635, 3640, 3645, 3650, 3655, 3660, 3665, 3670, 3675, 3680, 3685, 3690, 3695, 3700, 3705, 3710, 3715, 3720, 3725, 3730, 3735, 3740, 3745, 3750, 3755, 3760, 3765, 3770, 3775, 3780, 3785, 3790, 3795, 3800, 3805, 3810, 3815, 3820, 3825, 3830, 3835, 3840, 3845, 3850, 3855, 3860, 3865, 3870, 3875, 3880, 3885, 3890, 3895, 3900, 3905, 3910, 3915, 3920, 3925, 3930, 3935, 3940, 3945, 3950, 3955, 3960, 3965, 3970, 3975, 3980, 3985, 3990, 3995, 4000, 4005, 4010, 4015, 4020, 4025, 4030, 4035, 4040, 4045, 4050, 4055, 4060, 4065, 4070, 4075, 4080, 4085, 4090, 4095, 4100, 4105, 4110, 4115, 4120, 4125, 4130, 4135, 4140, 4145, 4150, 4155, 4160, 4165, 4170, 4175, 4180, 4185, 4190, 4195, 4200, 4205, 4210, 4215, 4220, 4225, 4230, 4235, 4240, 4245, 4250, 4255, 4260, 4265, 4270, 4275, 4280, 4285, 4290, 4295, 4300, 4305, 4310, 4315, 4320, 4325, 4330, 4335, 4340, 4345, 4350, 4355, 4360, 4365, 4370, 4375, 4380, 4385, 4390, 4395, 4400, 4405, 4410, 4415, 4420, 4425, 4430, 4435, 4440, 4445, 4450, 4455, 4460, 4465, 4470, 4475, 4480, 4485, 4490, 4495, 4500, 4505, 4510, 4515, 4520, 4525, 4530, 4535, 4540, 4545, 4550, 4555, 4560, 4565, 4570, 4575, 4580, 4585, 4590, 4595, 4600, 4605, 4610, 4615, 4620, 4625, 4630, 4635, 4640, 4645, 4650, 4655, 4660, 4665, 4670, 4675, 4680, 4685, 4690, 4695, 4700, 4705, 4710, 4715, 4720, 4725, 4730, 4735, 4740, 4745, 4750, 4755, 4760, 4765, 4770, 4775, 4780, 4785, 4790, 4795, 4800, 4805, 4810, 4815, 4820, 4825, 4830, 4835, 4840, 4845, 4850, 4855, 4860, 4865, 4870, 4875, 4880, 4885, 4890, 4895, 4900, 4905, 4910, 4915, 4920, 4925, 4930, 4935, 4940, 4945, 4950, 4955, 4960, 4965, 4970, 4975, 4980, 4985, 4990, 4995, 5000, 5005, 5010, 5015, 5020, 5025, 5030, 5035, 5040, 5045, 5050, 5055, 5060, 5065, 5070, 5075, 5080, 5085, 5090, 5095, 5100, 5105, 5110, 5115, 5120, 5125, 5130, 5135, 5140, 5145, 5150, 5155, 5160, 5165, 5170, 5175, 5180, 5185, 5190, 5195, 5200, 5205, 5210, 5215, 5220, 5225, 5230, 5235, 5240, 5245, 5250, 5255, 5260, 5265, 5270, 5275, 5280, 5285, 5290, 5295, 5300, 5305, 5310, 5315, 5320, 5325, 5330, 5335, 5340, 5345, 5350, 5355, 5360, 5365, 5370, 5375, 5380, 5385, 5390, 5395, 5400, 5405, 5410, 5415, 5420, 5425, 5430, 5435, 5440, 5445, 5450, 5455, 5460, 5465, 5470, 5475, 5480, 5485, 5490, 5495, 5500, 5505, 5510, 5515, 5520, 5525, 5530, 5535, 5540, 5545, 5550, 5555, 5560, 5565, 5570, 5575, 5580, 5585, 5590, 5595, 5600, 5605, 5610, 5615, 5620, 5625, 5630, 5635, 5640, 5645, 5650, 5655, 5660, 5665, 5670, 5675, 5680, 5685, 5690, 5695, 5700, 5705, 5710, 5715, 5720, 5725, 5730, 5735, 5740, 5745, 5750, 5755, 5760, 5765, 5770, 5775, 5780, 5785, 5790, 5795, 5800, 5805, 5810, 5815, 5820, 5825, 5830, 5835, 5840, 5845, 5850, 5855, 5860, 5865, 5870, 5875, 5880, 5885, 5890, 5895, 5900, 5905, 5910, 5915, 5920, 5925, 5930, 5935, 5940, 5945, 5950, 5955, 5960, 5965, 5970, 5975, 5980, 5985, 5990, 5995, 6000, 6005, 6010, 6015, 6020, 6025, 6030, 6035, 6040, 6045, 6050, 6055, 6060, 6065, 6070, 6075, 6080, 6085, 6090, 6095, 6100, 6105, 6110, 6115, 6120, 6125, 6130, 6135, 6140, 6145, 6150, 6155, 6160, 6165, 6170, 6175, 6180, 6185, 6190, 6195, 6200, 6205, 6210, 6215, 6220, 6225, 6230, 6235, 6240, 6245, 6250, 6255, 6260, 6265, 6270, 6275, 6280, 6285, 6290, 6295, 6300, 6305, 6310, 6315, 6320, 6325, 6330, 6335, 6340, 6345, 6350, 6355, 6360, 6365, 6370, 6375, 6380, 6385, 6390, 6395, 6400, 6405, 6410, 6415, 6420, 6425, 6430, 6435, 6440, 6445, 6450, 6455, 6460, 6465, 6470, 6475, 6480, 6485, 6490, 6495, 6500, 6505, 6510, 6515, 6520, 6525, 6530, 6535, 6540, 6545, 6550, 6555, 6560, 6565, 6570, 6575, 6580, 6585, 6590, 6595, 6600, 6605, 6610, 6615, 6620, 6625, 6630, 6635, 6640, 6645, 6650, 6655, 6660, 6665, 6670, 6675, 6680, 6685, 6690, 6695, 6700, 6705, 6710, 6715, 6720, 6725, 6730, 6735, 6740, 6745, 6750, 6755, 6760, 6765, 6770, 6775, 6780, 6785, 6790, 6795, 6800, 6805, 6810, 6815, 6820, 6825, 6830, 6835, 6840, 6845, 6850, 6855, 6860, 6865, 6870, 6875, 6880, 6885, 6890, 6895, 6900, 6905, 6910, 6915, 6920, 6925, 6930, 6935, 6940, 6945, 6950, 6955, 6960, 6965, 6970, 6975, 6980, 6985, 6990, 6995, 7000, 7005, 7010, 7015, 7020, 7025, 7030, 7035, 7040, 7045, 7050, 7055, 7060, 7065, 7070, 7075, 7080, 7085, 7090, 7095, 7100, 7105, 7110, 7115, 7120, 7125, 7130, 7135, 7140, 7145, 7150, 7155, 7160, 7165, 7170, 7175, 7180, 7185, 7190, 7195, 7200, 7205, 7210, 7215, 7220, 7225, 7230, 7235, 7240, 7245, 7250, 7255, 7260, 7265, 7270, 7275, 7280, 7285, 7290, 7295, 7300, 7305, 7310, 7315, 7320, 7325, 7330, 7335, 7340, 7345, 7350, 7355, 7360, 7365, 7370, 7375, 7380, 7385, 7390, 7395, 7400, 7405, 7410, 7415, 7420, 7425, 7430, 7435, 7440, 7445, 7450, 7455, 7460, 7465, 7470, 7475, 7480, 7485, 7490, 7495, 7500, 7505, 7510, 7515, 7520, 7525, 7530, 7535, 7540, 7545, 7550, 7555, 7560, 7565, 7570, 7575, 7580, 7585, 7590, 7595, 7600, 7605, 7610, 7615, 7620, 7625, 7630, 7635, 7640, 7645, 7650, 7655, 7660, 7665, 7670, 7675, 7680, 7685, 7690, 7695, 7700, 7705, 7710, 7715, 7720, 7725, 7730, 7735, 7740, 7745, 7750, 7755, 7760, 7765, 7770, 7775, 7780, 7785, 7790, 7795, 7800, 7805, 7810, 7815, 7820, 7825, 7830, 7835, 7840, 7845, 7850, 7855, 7860, 7865, 7870, 7875, 7880, 7885, 7890, 7895, 7900, 7905, 7910, 7915, 7920, 7925, 7930, 7935, 7940, 7945, 7950, 7955, 7960, 7965, 7970, 7975, 7980, 7985, 7990, 7995, 8000, 8005, 8010, 8015, 8020, 8025, 8030, 8035, 8040, 8045, 8050, 8055, 8060, 8065, 8070, 8075, 8080, 8085, 8090, 8095, 8100, 8105, 8110, 8115, 8120, 8125, 8130, 8135, 8140, 8145, 8150, 8155, 8160, 8165, 8170, 8175, 8180, 8185, 8190, 8195, 8200, 8205, 8210, 8215, 8220, 8225, 8230, 8235, 8240, 8245, 8250, 8255, 8260, 8265, 8270, 8275, 8280, 8285, 8290, 8295, 8300, 8305, 8310, 8315, 8320, 8325, 8330, 8335, 8340, 8345, 8350, 8355, 8360, 8365, 8370, 8375, 8380, 8385, 8390, 8395, 8400, 8405, 8410, 8415, 8420, 8425, 8430, 8435, 8440, 8445, 8450, 8455, 8460, 8465, 8470, 8475, 8480, 8485, 8490, 8495, 8500, 8505, 8510, 8515, 8520, 8525, 8530, 8535, 8540, 8545, 8550, 8555, 8560, 8565, 8570, 8575, 8580, 8585, 8590, 8595, 8600, 8605, 8610, 8615, 8620, 8625, 8630, 8635, 8640, 8645, 8650, 8655, 8660, 8665, 8670, 8675, 8680, 8685, 8690, 8695, 8700, 8705, 8710, 8715, 8720, 8725, 8730, 8735, 8740, 8745, 8750, 8755, 8760, 8765, 8770, 8775, 8780, 8785, 8790, 8795, 8800, 8805, 8810, 8815, 8820, 8825, 8830, 8835, 8840, 8845, 8850, 8855, 8860, 8865, 8870, 8875, 8880, 8885, 8890, 8895, 8900, 8905, 8910, 8915, 8920, 8925, 8930, 8935, 8940, 8945, 8950, 8955, 8960, 8965, 8970, 8975, 8980, 8985, 8990, 8995, 9000, 9005, 9010, 9015, 9020, 9025, 9030, 9035, 9040, 9045, 9050, 9055, 9060, 9065, 9070, 9075, 9080, 9085, 9090, 9095, 9100, 9105, 9110, 9115, 9120, 9125, 9130, 9135, 9140, 9145, 9150, 9155, 9160, 9165, 9170, 9175, 9180, 9185, 9190, 9195, 9200, 9205, 9210, 9215, 9220, 9225, 9230, 9235, 9240, 9245, 9250, 9255, 9260, 9265, 9270, 9275, 9280, 9285, 9290, 9295, 9300, 9305, 9310, 9315, 9320, 9325, 9330, 9335, 9340, 9345, 9350, 9355, 9360, 9365, 9370, 9375, 9380, 9385, 9390, 9395, 9400, 9405, 9410,

COMPASSES, DIVIDERS, &c.
Compass.....dis 70kto \$
Calipers.....dis 70kto \$
Dividers.....dis 70kto \$
Cook's Pencil.....dis 10 \$

COOPERS TOOLS.
Bradley's.....dis 15kto \$
Barton's.....dis 10 \$

CROW BAR.
Cast Steel.....dis 35kto \$
Iron, Steel Points.....dis 35kto \$

CURLING IRONS, &c.
No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

CURRY COMBS.
Fitch's new list.....dis 50kto \$
Hotchkiss, Novelty, new list, July, 1880.....dis 50 \$
Hotchkiss, Excelsior Superior Champion.....dis 50 \$
Lawrence, "Perfect".....dis 50 \$
Rubber.....dis 50 \$
Sweet & Clarke.....dis 50 \$
Lusters.....dis 50 \$

CURTAIN PINS.
Silvered Glass.....dis 50 \$
White Enamel.....dis 50 \$

CUTLERY.
Association (Table).....dis 50 \$
Nauvick Cutlery Co.....dis 50 \$
Excelsior Knife Co.....dis 50 \$
Wilson's Butcher and Shoe Knives.....dis 50 \$
Amen's Shoe Knives.....dis 50 \$
Wm. Rogers Mfg. Co., Plated Cutlery.....dis 50 \$

DOG COLLARS.
Embossed Gilt.....dis 50 \$
Leather.....dis 50 \$
Brass.....dis 50 \$

DOOR SPRINGS.
Torrey's Rod, regular size.....dis 50 \$
Gem (Coll): List, April 19, 1886.....dis 50 \$
Standard—10 doz \$1.25; 5 doz \$1.75.....dis 50 \$
Hercules.....dis 50 \$

DRAWING KNIVES.
Middlesex Mfg. Co.....dis 75 \$
Cresman's No. 1.....dis 75 \$
Nobles Mfg. Co.....dis 75 \$
Bradley's.....dis 75 \$
Adjustable Handle.....dis 75 \$
P. S. & W.....dis 75 \$
Donglass.....dis 75 \$

DRILLS AND DRILL STOCKS.
Blacksmith's.....dis 75 \$
Blacksmith's Self-Feeding.....dis 75 \$
Brest, P. S. & W.....dis 75 \$
Brest, Wilson's.....dis 75 \$
Brest, Millers Falls.....dis 75 \$
Brest, Bartholomew's.....dis 75 \$
Wilson's Drill Stocks.....dis 75 \$
Automatic Boring Tools.....dis 75 \$
Manner Drill Mfg. Co.....dis 75 \$
Model Bench Drill.....dis 75 \$
XXX Post Drill.....dis 75 \$

DOG BRUSHES.
Dover.....dis 75 \$
Acme.....dis 75 \$
Victoria.....dis 75 \$

EMERY AND EMERY PAPER.
Regular numbers.....dis 75 \$
Flour and F. F.....dis 75 \$
B. & A. Emery Paper.....dis 75 \$

ENAMELED AND TINNED WARE.
Kettles.....dis 75 \$
Sauce Pans.....dis 75 \$
Flamed Sauce Pans.....dis 75 \$
Escutcheon Pins—Brass.....dis 75 \$

ESCUTCHEONS.
Door Lock.....dis 75 \$
Brass Thread.....dis 75 \$
Wood.....dis 75 \$

FAUCETS.
Furn's Cork Stope.....dis 75 \$
Bier.....dis 75 \$
Furn's Patent Petroleum.....dis 75 \$
Went's Patent Key.....dis 75 \$
Anchor Lock.....dis 75 \$
Metallic Key, Leather Lined.....dis 75 \$
Cork Lined.....dis 75 \$
J. Sommer's Best Metallic Key.....dis 75 \$
J. Sommer's Cork Lined, net quality.....dis 75 \$

FILMS.
E. M. Boynton's.....dis 75 \$
Western Film Co.....dis 75 \$
Butcher's.....dis 75 \$
Moss & Gambie.....dis 75 \$
H. Diaton & Sons (new list).....dis 75 \$
Heller Bros.' Horse Raps.....dis 75 \$
Nicholson.....dis 75 \$
New American.....dis 75 \$
Union Film Co.....dis 75 \$
Stute, new list.....dis 75 \$

FLUTING MACHINES.
Knox, 1/4-inch Rolls.....dis 75 \$
Knox, 1/2-inch Rolls.....dis 75 \$
Knox, 3/4-inch Rolls.....dis 75 \$
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HORSE SHOES.	
Walker's Horse Shoes.....	\$4.00 per keg
Walker's Mule Shoes.....	\$3.00 per keg
Phenix Light, Medium and Heavy Horse Shoes.....	\$4.10 per keg
Phenix Mule Shoes.....	\$3.10 per keg
Phenix Forged Horse Shoes.....	\$4.10 per keg
Phenix Forged Mule Shoes.....	\$3.10 per keg
Phenix Calked.....	\$5.00 per keg
Phenix Calked Mule Shoes.....	\$4.00 per keg
Phenix Horse Shoes.....	\$4.10 per keg
Phenix Mule.....	\$3.10 per keg
On Snow—Mt. Carmel Ox Shoes.....	\$5.10 per keg

ICE CREAM FREEZERS.		Per Doz.
Perkins—3 quart, \$4.50; 4 quart, \$5.50; 6 quart, \$7.00; 8 quart, \$8.50; 10 quart, \$10.00; 12 quart, \$11.50; 14 quart, \$13.00; 16 quart, \$14.50; 18 quart, \$16.00; 20 quart, \$17.50; 22 quart, \$19.00; 24 quart, \$20.50; 26 quart, \$22.00; 28 quart, \$23.50; 30 quart, \$25.00; 32 quart, \$26.50; 34 quart, \$28.00; 36 quart, \$29.50; 38 quart, \$31.00; 40 quart, \$32.50; 42 quart, \$34.00; 44 quart, \$35.50; 46 quart, \$37.00; 48 quart, \$38.50; 50 quart, \$40.00; 52 quart, \$41.50; 54 quart, \$43.00; 56 quart, \$44.50; 58 quart, \$46.00; 60 quart, \$47.50; 62 quart, \$49.00; 64 quart, \$50.50; 66 quart, \$52.00; 68 quart, \$53.50; 70 quart, \$55.00; 72 quart, \$56.50; 74 quart, \$58.00; 76 quart, \$59.50; 78 quart, \$61.00; 80 quart, \$62.50; 82 quart, \$64.00; 84 quart, \$65.50; 86 quart, \$67.00; 88 quart, \$68.50; 90 quart, \$70.00; 92 quart, \$71.50; 94 quart, \$73.00; 96 quart, \$74.50; 98 quart, \$76.00; 100 quart, \$77.50; 102 quart, \$79.00; 104 quart, \$80.50; 106 quart, \$82.00; 108 quart, \$83.50; 110 quart, \$85.00; 112 quart, \$86.50; 114 quart, \$88.00; 116 quart, \$89.50; 118 quart, \$91.00; 120 quart, \$92.50; 122 quart, \$94.00; 124 quart, \$95.50; 126 quart, \$97.00; 128 quart, \$98.50; 130 quart, \$100.00; 132 quart, \$101.50; 134 quart, \$103.00; 136 quart, \$104.50; 138 quart, \$106.00; 140 quart, \$107.50; 142 quart, \$109.00; 144 quart, \$110.50; 146 quart, \$112.00; 148 quart, \$113.50; 150 quart, \$115.00; 152 quart, \$116.50; 154 quart, \$118.00; 156 quart, \$119.50; 158 quart, \$121.00; 160 quart, \$122.50; 162 quart, \$124.00; 164 quart, \$125.50; 166 quart, \$127.00; 168 quart, \$128.50; 170 quart, \$130.00; 172 quart, \$131.50; 174 quart, \$133.00; 176 quart, \$134.50; 178 quart, \$136.00; 180 quart, \$137.50; 182 quart, \$139.00; 184 quart, \$140.50; 186 quart, \$142.00; 188 quart, \$143.50; 190 quart, \$145.00; 192 quart, \$146.50; 194 quart, \$148.00; 196 quart, \$149.50; 198 quart, \$151.00; 200 quart, \$152.50; 202 quart, \$154.00; 204 quart, \$155.50; 206 quart, \$157.00; 208 quart, \$158.50; 210 quart, \$160.00; 212 quart, \$161.50; 214 quart, \$163.00; 216 quart, \$164.50; 218 quart, \$166.00; 220 quart, \$167.50; 222 quart, \$169.00; 224 quart, \$170.50; 226 quart, \$172.00; 228 quart, \$173.50; 230 quart, \$175.00; 232 quart, \$176.50; 234 quart, \$178.00; 236 quart, \$179.50; 238 quart, \$181.00; 240 quart, \$182.50; 242 quart, \$184.00; 244 quart, \$185.50; 246 quart, \$187.00; 248 quart, \$188.50; 250 quart, \$190.00; 252 quart, \$191.50; 254 quart, \$193.00; 256 quart, \$194.50; 258 quart, \$196.00; 260 quart, \$197.50; 262 quart, \$199.00; 264 quart, \$200.50; 266 quart, \$202.00; 268 quart, \$203.50; 270 quart, \$205.00; 272 quart, \$206.50; 274 quart, \$208.00; 276 quart, \$209.50; 278 quart, \$211.00; 280 quart, \$212.50; 282 quart, \$214.00; 284 quart, \$215.50; 286 quart, \$217.00; 288 quart, \$218.50; 290 quart, \$220.00; 292 quart, \$221.50; 294 quart, \$223.00; 296 quart, \$224.50; 298 quart, \$226.00; 300 quart, \$227.50; 302 quart, \$229.00; 304 quart, \$230.50; 306 quart, \$232.00; 308 quart, \$233.50; 310 quart, \$235.00; 312 quart, \$236.50; 314 quart, \$238.00; 316 quart, \$239.50; 318 quart, \$241.00; 320 quart, \$242.50; 322 quart, \$244.00; 324 quart, \$245.50; 326 quart, \$247.00; 328 quart, \$248.50; 330 quart, \$250.00; 332 quart, \$251.50; 334 quart, \$253.00; 336 quart, \$254.50; 338 quart, \$256.00; 340 quart, \$257.50; 342 quart, \$259.00; 344 quart, \$260.50; 346 quart, \$262.00; 348 quart, \$263.50; 350 quart, \$265.00; 352 quart, \$266.50; 354 quart, \$268.00; 356 quart, \$269.50; 358 quart, \$271.00; 360 quart, \$272.50; 362 quart, \$274.00; 364 quart, \$275.50; 366 quart, \$277.00; 368 quart, \$278.50; 370 quart, \$280.00; 372 quart, \$281.50; 374 quart, \$283.00; 376 quart, \$284.50; 378 quart, \$286.00; 380 quart, \$287.50; 382 quart, \$289.00; 384 quart, \$290.50; 386 quart, \$292.00; 388 quart, \$293.50; 390 quart, \$295.00; 392 quart, \$296.50; 394 quart, \$298.00; 396 quart, \$299.50; 398 quart, \$301.00; 400 quart, \$302.50; 402 quart, \$304.00; 404 quart, \$305.50; 406 quart, \$307.00; 408 quart, \$308.50; 410 quart, \$310.00; 412 quart, \$311.50; 414 quart, \$313.00; 416 quart, \$314.50; 418 quart, \$316.00; 420 quart, \$317.50; 422 quart, \$319.00; 424 quart, \$320.50; 426 quart, \$322.00; 428 quart, \$323.50; 430 quart, \$325.00; 432 quart, \$326.50; 434 quart, \$328.00; 436 quart, \$329.50; 438 quart, \$331.00; 440 quart, \$332.50; 442 quart, \$334.00; 444 quart, \$335.50; 446 quart, \$337.00; 448 quart, \$338.50; 450 quart, \$340.00; 452 quart, \$341.50; 454 quart, \$343.00; 456 quart, \$344.50; 458 quart, \$346.00; 460 quart, \$347.50; 462 quart, \$349.00; 464 quart, \$350.50; 466 quart, \$352.00; 468 quart, \$353.50; 470 quart, \$355.00; 472 quart, \$356.50; 474 quart, \$358.00; 476 quart, \$359.50; 478 quart, \$361.00; 480 quart, \$362.50; 482 quart, \$364.00; 484 quart, \$365.50; 486 quart, \$367.00; 488 quart, \$368.50; 490 quart, \$370.00; 492 quart, \$371.50; 494 quart, \$373.00; 496 quart, \$374.50; 498 quart, \$376.00; 500 quart, \$377.50; 502 quart, \$379.00; 504 quart, \$380.50; 506 quart, \$382.00; 508 quart, \$383.50; 510 quart, \$385.00; 512 quart, \$386.50; 514 quart, \$388.00; 516 quart, \$389.50; 518 quart, \$391.00; 520 quart, \$392.50; 522 quart, \$394.00; 524 quart, \$395.50; 526 quart, \$397.00; 528 quart, \$398.50; 530 quart, \$400.00; 532 quart, \$401.50; 534 quart, \$403.00; 536 quart, \$404.50; 538 quart, \$406.00; 540 quart, \$407.50; 542 quart, \$409.00; 544 quart, \$410.50; 546 quart, \$412.00; 548 quart, \$413.50; 550 quart, \$415.00; 552 quart, \$416.50; 554 quart, \$418.00; 556 quart, \$419.50; 558 quart, \$421.00; 560 quart, \$422.50; 562 quart, \$424.00; 564 quart, \$425.50; 566 quart, \$427.00; 568 quart, \$428.50; 570 quart, \$430.00; 572 quart, \$431.50; 574 quart, \$433.00; 576 quart, \$434.50; 578 quart, \$436.00; 580 quart, \$437.50; 582 quart, \$439.00; 584 quart, \$440.50; 586 quart, \$442.00; 588 quart, \$443.50; 590 quart, \$445.00; 592 quart, \$446.50; 594 quart, \$448.00; 596 quart, \$449.50; 598 quart, \$451.00; 600 quart, \$452.50; 602 quart, \$454.00; 604 quart, \$455.50; 606 quart, \$457.00; 608 quart, \$458.50; 610 quart, \$460.00; 612 quart, \$461.50; 614 quart, \$463.00; 616 quart, \$464.50; 618 quart, \$466.00; 620 quart, \$467.50; 622 quart, \$469.00; 624 quart, \$470.50; 626 quart, \$472.00; 628 quart, \$473.50; 630 quart, \$475.00; 632 quart, \$476.50; 634 quart, \$478.00; 636 quart, \$479.50; 638 quart, \$481.00; 640 quart, \$482.50; 642 quart, \$484.00; 644 quart, \$485.50; 646 quart, \$487.00; 648 quart, \$488.50; 650 quart, \$490.00; 652 quart, \$491.50; 654 quart, \$493.00; 656 quart, \$494.50; 658 quart, \$496.00; 660 quart, \$497.50; 662 quart, \$499.00; 664 quart, \$500.50; 666 quart, \$502.00; 668 quart, \$503.50; 670 quart, \$505.00; 672 quart, \$506.50; 674 quart, \$508.00; 676 quart, \$509.50; 678 quart, \$511.00; 680 quart, \$512.50; 682 quart, \$514.00; 684 quart, \$515.50; 686 quart, \$517.00; 688 quart, \$518.50; 690 quart, \$520.00; 692 quart, \$521.50; 694 quart, \$523.00; 696 quart, \$524.50; 698 quart, \$526.00; 700 quart, \$527.50; 702 quart, \$529.00; 704 quart, \$530.50; 706 quart, \$532.00; 708 quart, \$533.50; 710 quart, \$535.00; 712 quart, \$536.50; 714 quart, \$538.00; 716 quart, \$539.50; 718 quart, \$541.00; 720 quart, \$542.50; 722 quart, \$544.00; 724 quart, \$545.50; 726 quart, \$547.00; 728 quart, \$548.50; 730 quart, \$550.00; 732 quart, \$551.50; 734 quart, \$553.00; 736 quart, \$554.50; 738 quart, \$556.00; 740 quart, \$557.50; 742 quart, \$559.00; 744 quart, \$560.50; 746 quart, \$562.00; 748 quart, \$563.50; 750 quart, \$565.00; 752 quart, \$566.50; 754 quart, \$568.00; 756 quart, \$569.50; 758 quart, \$571.00; 760 quart, \$572.50; 762 quart, \$574.00; 764 quart, \$575.50; 766 quart, \$577.00; 768 quart, \$578.50; 770 quart, \$580.00; 772 quart, \$581.50; 774 quart, \$583.00; 776 quart, \$584.50; 778 quart, \$586.00; 780 quart, \$587.50; 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878 quart, \$661.00; 880 quart, \$662.50; 882 quart, \$664.00; 884 quart, \$665.50; 886 quart, \$667.00; 888 quart, \$668.50; 890 quart, \$670.00; 892 quart, \$671.50; 894 quart, \$673.00; 896 quart, \$674.50; 898 quart, \$676.00; 900 quart, \$677.50; 902 quart, \$679.00; 904 quart, \$680.50; 906 quart, \$682.00; 908 quart, \$683.50; 910 quart, \$685.00; 912 quart, \$686.50; 914 quart, \$688.00; 916 quart, \$689.50; 918 quart, \$691.00; 920 quart, \$692.50; 922 quart, \$694.00; 924 quart, \$695.50; 926 quart, \$697.00; 928 quart, \$698.50; 930 quart, \$700.00; 932 quart, \$701.50; 934 quart, \$703.00; 936 quart, \$704.50; 938 quart, \$706.00; 940 quart, \$707.50; 942 quart, \$709.00; 944 quart, \$710.50; 946 quart, \$712.00; 948 quart, \$713.50; 950 quart, \$715.00; 952 quart, \$716.50; 954 quart, \$718.00; 956 quart, \$719.50; 958 quart, \$721.00; 960 quart, \$722.50; 962 quart, \$724.00; 964 quart, \$725.50; 966 quart, \$727.00; 968 quart, \$728.50; 970 quart, \$730.00; 972 quart, \$731.50; 974 quart, \$733.00; 976 quart, \$734.50; 978 quart, \$736.00; 980 quart, \$737.50; 982 quart, \$739.00; 984 quart, \$740.50; 986 quart, \$742.00; 988 quart, \$743.50; 990 quart, \$745.00; 992 quart, \$746.50; 994 quart, \$748.00; 996 quart, \$749.50; 998 quart, \$751.00; 1000 quart, \$752.50; 1002 quart, \$754.00; 1004 quart, \$755.50; 1006 quart, \$757.00; 1008 quart, \$758.50; 1010 quart, \$760.00; 1012 quart, \$761.50; 1014 quart, \$763.00; 1016 quart, \$764.50; 1018 quart, \$766.00; 1020 quart, \$767.50; 1022 quart, \$769.00; 1024 quart, \$770.50; 1026 quart, \$772.00; 1028 quart, \$773.50; 1030 quart, \$775.00; 1032 quart, \$776.50; 1034 quart, \$778.00; 1036 quart, \$779.50; 1038 quart, \$781.00; 1040 quart, \$782.50; 1042 quart, \$784.00; 1044 quart, \$785.50; 1046 quart, \$787.00; 1048 quart, \$788.50; 1050 quart, \$790.00; 1052 quart, \$791.50; 1054 quart, \$793.00; 1056 quart, \$794.50; 1058 quart, \$796.00; 1060 quart, \$797.50; 1062 quart, \$799.00; 1064 quart, \$800.50; 1066 quart, \$802.00; 1068 quart, \$803.50; 1070 quart, \$805.00; 1072 quart, \$806.50; 1074 quart, \$808.00; 1076 quart, \$809.50; 1078 quart, \$811.00; 1080 quart, \$812.50; 1082 quart, \$814.00; 1084 quart, \$815.50; 1086 quart, \$817.00; 1088 quart, \$818.50; 1090 quart, \$820.00; 1092 quart, \$821.50; 1094 quart, \$823.00; 1096 quart, \$824.50; 1098 quart, \$826.00; 1100 quart, \$827.50; 1102 quart, \$829.00; 1104 quart, \$830.50; 1106 quart, \$832.00; 1108 quart, \$833.50; 1110 quart, \$835.00; 1112 quart, \$836.50; 1114 quart, \$838.00; 1116 quart, \$839.50; 1118 quart, \$841.00; 1120 quart, \$842.50; 1122 quart, \$844.00; 1124 quart, \$845.50; 1126 quart, \$847.00; 1128 quart, \$848.50; 1130 quart, \$850.00; 1132 quart, \$851.50; 1134 quart, \$853.00; 1136 quart, \$854.50; 1138 quart, \$856.00; 1140 quart, \$857.50; 1142 quart, \$859.00; 1144 quart, \$860.50; 1146 quart, \$862.00; 1148 quart, \$863.50; 1150 quart, \$865.00; 1152 quart, \$866.50; 1154 quart, \$868.00; 1156 quart, \$869.50; 1158 quart, \$871.00; 1160 quart, \$872.50; 1162 quart, \$874.00; 1164 quart, \$875.50; 1166 quart, \$877.00; 1168 quart, \$878.50; 1170 quart, \$880.00; 1172 quart, \$881.50; 1174 quart, \$883.00; 1176 quart, \$884.50; 1178 quart, \$886.00; 1180 quart, \$887.50; 1182 quart, \$889.00; 1184 quart, \$890.50; 1186 quart, \$892.00; 1188 quart, \$893.50; 1190 quart, \$895.00; 1192 quart, \$896.50; 1194 quart, \$898.00; 1196 quart, \$899.50; 1198 quart, \$901.00; 1200 quart, \$902.50; 1202 quart, \$904.00; 1204 quart, \$905.50; 1206 quart, \$907.00; 1208 quart, \$908.50; 1210 quart, \$910.00; 1212 quart, \$911.50; 1214 quart, \$913.00; 1216 quart, \$914.50; 1218 quart, \$916.00; 1220 quart, \$917.50; 1222 quart, \$919.00; 1224 quart, \$920.50; 1226 quart, \$922.00; 1228 quart, \$923.50; 1230 quart, \$925.00; 1232 quart, \$926.50; 1234 quart, \$928.00; 1236 quart, \$929.50; 1238 quart, \$931.00; 1240 quart, \$932.50; 1242 quart, \$934.00; 1244 quart, \$935.50; 1246 quart, \$937.00; 1248 quart, \$938.50; 1250 quart, \$940.00; 1252 quart, \$941.50; 1254 quart, \$943.00; 1256 quart, \$944.50; 1258 quart, \$946.00; 1260 quart, \$947.50; 1262 quart, \$949.00; 1264 quart, \$950.50; 1266 quart, \$952.00; 1268 quart, \$953.50; 1270 quart, \$955.00; 1272 quart, \$956.50; 1274 quart, \$958.00; 1276 quart, \$959.50; 1278 quart, \$961.00; 1280 quart, \$962.50; 1282 quart, \$964.00; 1284 quart, \$965.50; 1286 quart, \$967.00; 1288 quart, \$968.50; 1290 quart, \$970.00; 1292 quart, \$971.50; 1294 quart, \$973.00; 1296 quart, \$974.50; 1298 quart, \$976.00; 1300 quart, \$977.50; 1302 quart, \$979.00; 1304 quart, \$980.50; 1306 quart, \$982.00; 1308 quart, \$983.50; 1310 quart, \$985.00; 1312 quart, \$986.50; 1314 quart, \$988.00; 1316 quart, \$989.50; 1318 quart, \$991.00; 1320 quart, \$992.50; 1322 quart, \$994.00; 1324 quart, \$995.50; 1326 quart, \$997.00; 1328 quart, \$998.50; 1330 quart, \$1000.00; 1332 quart, \$1001.50; 1334 quart, \$1003.00; 1336 quart, \$1004.50; 1338 quart, \$1006.00; 1340 quart, \$1007.50; 1342 quart, \$1009.00; 1344 quart, \$1010.50; 1346 quart, \$1012.00; 1348 quart, \$1013.50; 1350 quart, \$1015.00; 1352 quart, \$1016.50; 1354 quart, \$1018.00; 1356 quart, \$1019.50; 1358 quart, \$1021.00; 1360 quart, \$1022.50; 1362 quart, \$1024.00; 1364 quart, \$1025.50; 1366 quart, \$1027.00; 1368 quart, \$1028.50; 1370 quart, \$1030.00; 1372 quart, \$1031.50; 1374 quart, \$1033.00; 1376 quart, \$1034.50; 1378 quart, \$1036.00; 1380 quart, \$1037.50; 1382 quart, \$1039.00; 1384 quart, \$1040.50; 1386 quart, \$1042.00; 1388 quart, \$1043.50; 1390 quart, \$1045.00; 1392 quart, \$1046.50; 1394 quart, \$1048.00; 1396 quart, \$1049.50; 1398 quart, \$1051.00; 1400 quart, \$1052.50; 1402 quart, \$1054.00; 1404 quart, \$1055.50; 1406 quart, \$1057.00; 1408 quart, \$1058.50; 1410 quart, \$1060.00; 1412 quart, \$1061.50; 1414 quart, \$1063.00; 1416 quart, \$1064.50; 1418 quart, \$1066.00; 1420 quart, \$1067.50; 1422 quart, \$1069.00; 1424 quart, \$1070.50; 1426 quart, \$1072.00; 1428 quart, \$1073.50; 1430 quart, \$1075.00; 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1520 quart, \$1142.50; 1522 quart, \$1144.00; 1524 quart, \$1145.50; 1526 quart, \$1147.00; 1528 quart, \$1148.50; 1530 quart, \$1150.00; 1532 quart, \$1151.50; 1534 quart, \$1153.00; 1536 quart, \$1154.50; 1538 quart, \$1156.00; 1540 quart, \$1157.50; 1542 quart, \$1159.00; 1544 quart, \$1160.50; 1546 quart, \$1162.00; 1548 quart, \$1163.50; 1550 quart, \$1165.00; 1552 quart, \$1166.50; 1554 quart, \$1168.00; 1556 quart, \$1169.50; 1558 quart, \$1171.00; 1560 quart, \$1172.50; 1562 quart, \$1174.00; 1564 quart, \$1175.50; 1566 quart, \$1177.00; 1568 quart, \$1178.50; 1570 quart, \$1180.00; 1572 quart, \$1181.50; 1574 quart, \$1183.00; 1576 quart, \$1184.50; 1578 quart, \$1186.00; 1580 quart, \$1187.50; 1582 quart, \$1189.00; 1584 quart, \$1190.50; 1586 quart, \$1192.00; 1588 quart, \$1193.50; 1590 quart, \$1195.00; 1592 quart, \$1196.50; 1594 quart, \$1198.00; 1596 quart, \$1199.50; 1598 quart, \$1201.00; 1600 quart, \$1202.50; 1602 quart, \$1204.00; 1604 quart, \$1205.50; 1606 quart, \$1207.00; 1608 quart, \$1208.50; 1610 quart, \$1210.00; 1612 quart, \$1211.50; 1614 quart, \$1213.00; 1616 quart, \$1214.50; 1618 quart, \$1216.00; 1620 quart, \$1217.50; 1622 quart, \$1219.00; 1624 quart, \$1220.50; 1626 quart, \$1222.00; 1628 quart, \$1223.50; 1630 quart, \$1225.00; 1632 quart, \$1226.50; 1634 quart, \$1228.00; 1636 quart, \$1229.50; 1638 quart, \$1231.00; 1640 quart, \$1232.50; 1642 quart, \$1234.00; 1644 quart, \$1235.50; 1646 quart, \$1237.00; 1648 quart, \$1238.50; 1650 quart, \$1240.00; 1652 quart, \$1241.50; 1654 quart, \$1243.00; 1656 quart, \$1244.50; 1658 quart, \$1246.00; 1660 quart, \$1247.50; 1662 quart, \$1249.00; 1664 quart, \$1250.50; 1666 quart, \$1252.00; 1668 quart, \$1253.50; 1670 quart, \$1255.00; 1672 quart, \$1256.50; 1674 quart, \$1258.00; 1676 quart, \$1259.50; 1678 quart, \$1261.00; 1680 quart, \$1262.50; 1682 quart, \$1264.00; 1684 quart, \$1265.50; 1686 quart, \$1267.00; 1688 quart, \$1268.50; 1690 quart, \$1270.00; 1692 quart, \$1271.50; 1694 quart, \$1273.00; 1696 quart, \$1274.50; 1698 quart, \$1276.00; 1700 quart, \$1277.50; 1702 quart, \$1279.00; 1704 quart, \$1280.50; 1		

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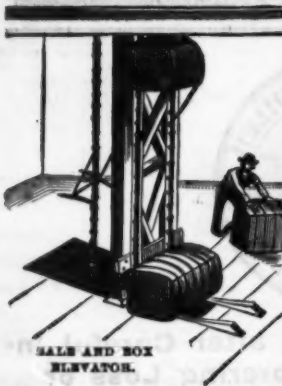


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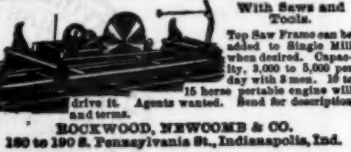
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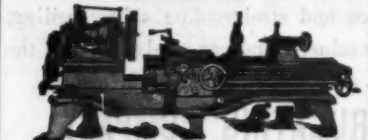
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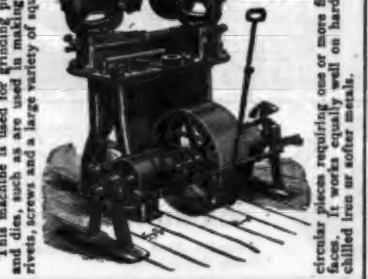
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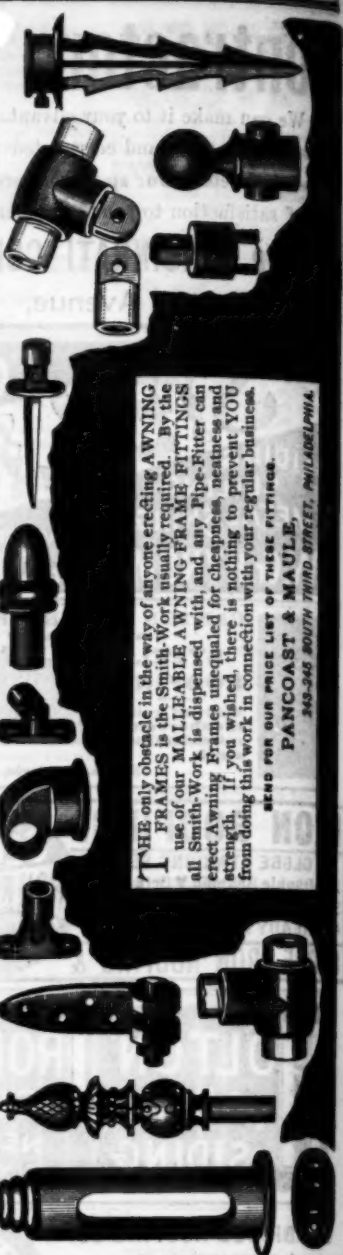
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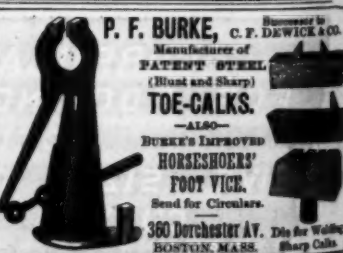
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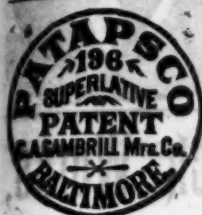
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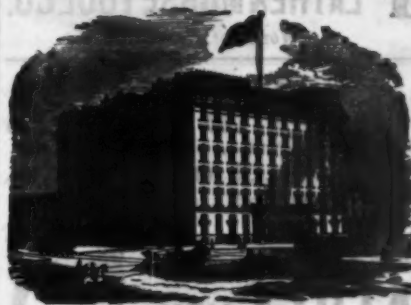
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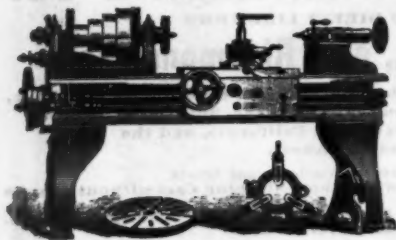
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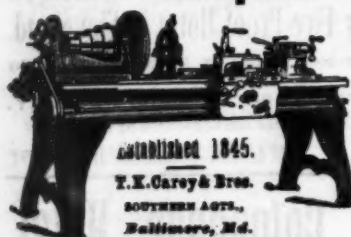


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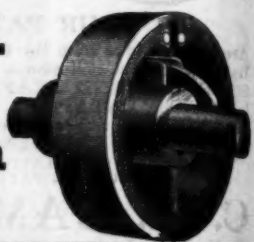
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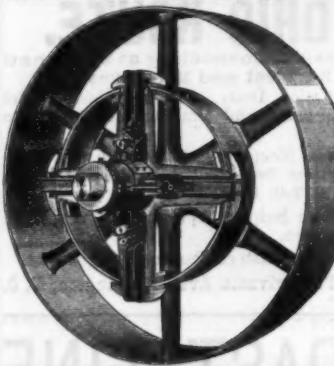
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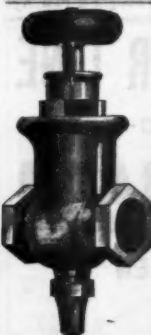
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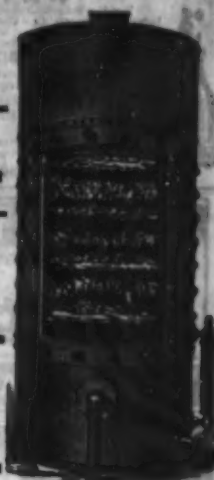
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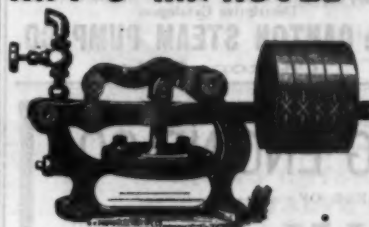
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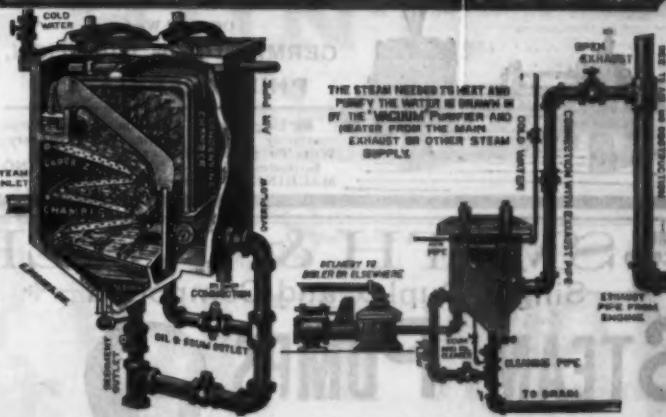
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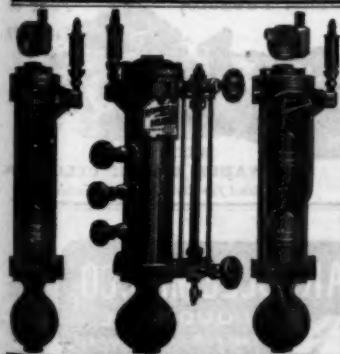
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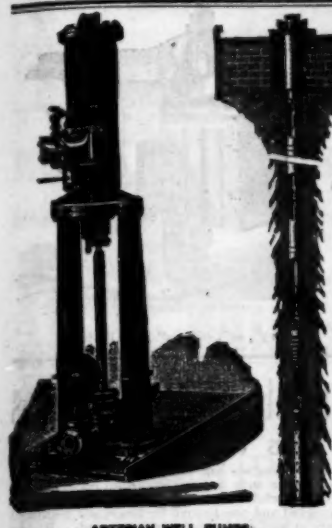
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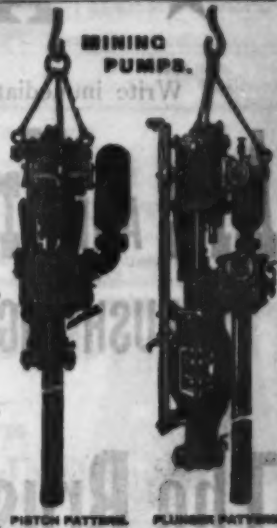


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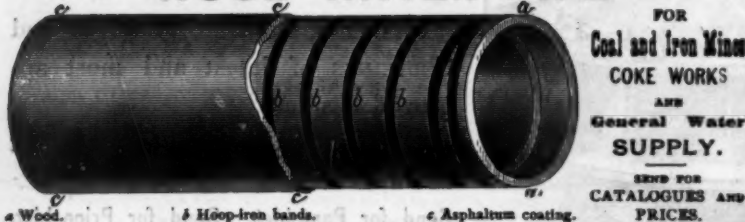
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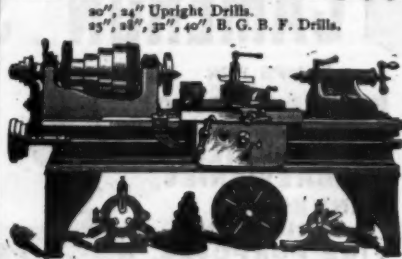
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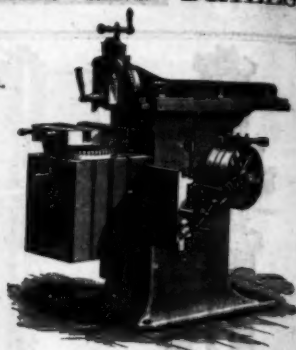
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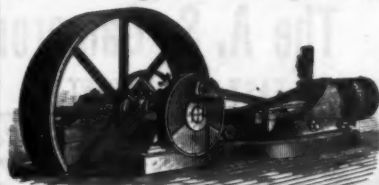
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